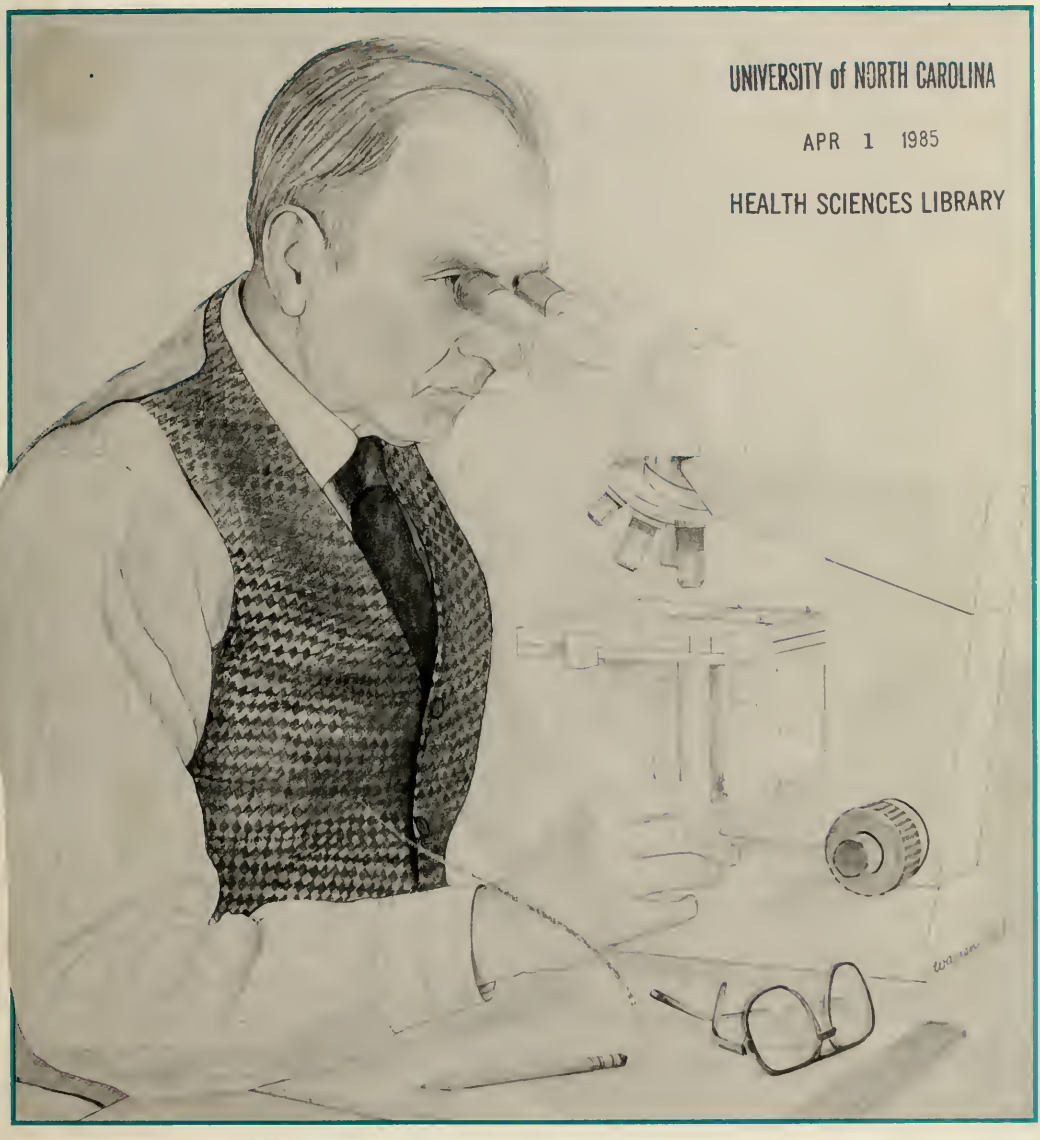
THE NORTH CAROLINA DENTAL R·E·V·I·E·W

Magazine of The School of Dentistry • The University of North Carolina at Chapel Hill
Volume 3, Number 1 **Winter 1985**



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Cover: Dental Research plays a significant role in dentistry. Here new materials and procedures are improved or developed before reaching the dental office for use in the practice of dentistry. In June of 1967 the Dental Center at the University of North Carolina School of Dentistry was completed and occupied. The four-story 44,000 square foot structure provides the most outstanding dental research facility to be found associated with dental education in this country. It offers the faculty and students with the unusual opportunity for exciting experience in research in a wide variety of projects. The Center is currently designated as one of five Regional Dental Research Centers funded by the National Institutes of Health. Within the following pages of this issue of the *North Carolina Dental Review*, the authors have provided you, the reader, current information on their research dealing with composites, crowns, and mercury.

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Dr. Barker

Dean's Commentary

Editor's Note: Dean Barker presented the following remarks to the Freshman Dental Class during orientation this past summer. His remarks will remind each of you of the responsibilities of the School of Dentistry in preparing the students for the dental profession and perhaps remind you of your responsibilities as a professional.

Remarks to First Year Class, Ben D. Barker, Dean August 22, 1984

You will not have to be around this place very long to learn that this is a highly sought after moment. Everyone wants access to you on this program because you are supposed to be young, impressionable and malleable. You are the much sought after new blood. And, your orientation represents a last chance for us to get in a good word, sprinkled with some liberal advice for your personal and professional life. So it is a real opportunity for me and I feel privileged to be the first on your agenda to extend a warm welcome to this community, to the University, and to the School of Dentistry.

Who Are You? Two thirds of you are from North Carolina; one third from elsewhere; twelve percent of you represent minorities; twenty-five percent are female. But to me and to this faculty, you are people, human beings about to begin the most rigorous educational experience of your life. I say *begin* because if you are to succeed in this profession you will commit yourselves today and every future day to a continuous learning process. Life span learning is one of the hallmarks of a profession. I will wish to say more about that in a moment.

My time is short and I want to share some truth about us with you. I might call this component of my remarks "squaring off", but I assure you I extend them as a fellow student and colleague with the deepest sense of sincerity and responsibility. I am glad you chose dentistry, and I am especially glad that you have chosen this School. That conveys an enormous responsibility on us – living up to the trust you have expressed in our ability to help you become what you want to be.

First, I want to speak about what we would like to be able to do, and actually what we can do. You are very good people and you are worthy students, but you are not more mature and aware than the generations who have preceded you. You are, in fact, neither better nor worse, but just as confused and unprepared. If anything, not as well prepared because you have not yet learned that there is no Royal Road to a D.D.S. – or anything else – and the value of *anything* is directly proportional to the effort required to get it. This means that we do not offer you professional level courses for university credit for doing lesser level work. We will not water down or simplify content when we see students struggling to achieve the minimum. But we will be patient and we will offer a hand and we will have the time to help you achieve your goals.

It also means you will not achieve mastery of any course or subject here. In fact, stand forewarned that we will not give C's for minimum competency and F's for anything less. At least I hope we will not. Grade inflation is lying, and sooner or later, the person lied to will hate the liar. This is especially important as one thinks about patient care and the interrelationship between patient, student clinician, and attending faculty member.

We are not teaching skills for living or values to make students moral. We do not educate the "whole person" and we never have. This is the worst lie of all. People learn to live by living, and they acquire an ethic by patterning themselves on the people with whom they live. The faculty can enlarge the number of patterns available to you by its own example, and by the example of the historic people about whom we teach. That is all – and that is a lot – but not enough to warrant the inflated claims we often hear from higher education.

Finally we do not prepare students to be successful at making a living. We do not – and never have. We offer skills and knowledge, a credential, a diploma which has become a sort of union card for getting various kinds of employment, including self-employment. Once our graduates have started that work, their success or failure depends upon a range of personal characteristics which we have influenced only minimally. One of these characteristics – the ability to distinguish the difference between the ideal and the possible, and act accordingly – we are clearly not experts in ourselves. Which brings us back to where we started – telling the truth.

Continued on page 6

Is Mercury a Hazard in Dentistry?

Miles A. Crenshaw, Ph.D.[1]; Jeffrey P. Mazza, D.D.S., M.S.[2] and Duane F. Taylor, Ph.D.[3]

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INTRODUCTION

Awareness of mercury as a potentially toxic material is widespread in the general population as well as within the dental profession. Of potential concern to dentistry is the question as to whether the mercury used in the fabrication of dental amalgam, and that remaining within the finished restoration, constitute a hazard to patients or dental office personnel. This question has been reviewed frequently in recent years. The most recent review concluded there was not sufficient scientific evidence to warrant discontinuing the use of dental amalgam (ADA News 30 July 1984). Yet another review is scheduled for the International Association of Dental Research Annual Meeting at Las Vegas in March, 1985 *(Around (A)IADR,* September 1984).

In spite of the high level of concern which exists about this topic, and repeated attempts to analyze and summarize the situation, considerable confusion still remains over the extent and the significance of the problem. Our purpose in this article is to briefly recount the potential hazards, to provide some standards for evaluating further literature, to suggest methods whereby mercury exposure can be minimized and to make the dental professional aware of an available program for monitoring the mercury levels in dental offices.

Potential effects due to mercury are a valid concern of the dental profession. Particular concern must be directed to the protection of the patient and the office staff from these effects. Due consideration must be given as to whether the benefits of using dental amalgam justify whatever risk remains in careful, well-controlled use. Amalgam is the most widely used restorative material. It provides the best and most economical means of restoring stress-bearing regions of posterior teeth. At present, the substitution of alternative materials, such as composites or cast restorations, can only be done at the expense of significant decreases in the service life of the restoration or significant increases in the cost of treatment. It is necessary to consider both the benefits and the costs in reaching a reasoned conclusion about the continued use of dental amalgam.

MERCURY EXPOSURE

Humans are continually exposed to mercury from a variety of sources in the environment. At normal exposure levels, the body's physiological processes are fully capable of dealing with mercury from these sources. Only if an individual is acutely exposed to large single doses or is chronically exposed to elevated mercury levels is the body's capacity to deal with mercury exceeded so that symptoms develop. Not only the extent and frequency of exposure, but also the form of mercury affect its toxicity.

Mercury is normally encountered in three forms; as elemental mercury, as inorganic compounds and as organic, alkyl mercury compounds. Elemental mercury is not toxic as an acute poison. It is less toxic than organic alkyl mercury

and more toxic than the inorganic compounds of mercury. Accordingly, the recommended exposure limits vary with the form. For mercury vapor the present acceptable, long-term weighted limit is set at 0.05 mg/m air and the short-term exposure limit is 0.15 mg/m^3 air (Am. Conf. Govt. Ind. Hyg., 1983). Inhaled mercury vapor is absorbed through the alveolar walls of the lungs. Elemental and alkyl mercury may also be absorbed directly through the skin. Ingested elemental mercury is absorbed through the gastrointestinal tract at a low efficiency, approximately 7% (Jugo, 1979). In each case it is probable that the mercury is converted to some other form before entering the general circulation. Alkyl mercury is absorbed as such from the gut while inorganic mercury is probably absorbed as ions.

The major excretion route of mercury is in the urine, but the onset of this excretion may occur some time after the exposure. The critical organ in elemental mercury poisoning varies according to the type of exposure. The lung is the critical organ in short-term exposure to high levels of mercury vapor, the kidneys in exposures of moderate duration to considerable levels and the brain in long-term exposure to moderate levels (Berlin, 1976). Analysis is complicated because several routes of exposure may occur simultaneously. The symptoms of mercury poisoning vary with the level of exposure and its duration, and they include neurological and renal effects. It has been difficult to assign specific symptoms as indicative of mercury poisoning in a given case without some knowledge of the previous history of the individual. For example, tremor is one of the most characteristic symptoms of mercury vapor poisoning, yet every person shows some degree of normal tremor (Suzuki, 1979).

Much of the confusion has arisen because the reports in the literature vary widely in quality and reliability. Many concerned individuals, unable to evaluate the validity of particular publications, have drawn exaggerated conclusions based upon dubious data. Serious consideration should be limited to extensive controlled studies in which the method of analysis used was appropriate to the form of mercury involved.

A number of studies have used unreliable methods to measure mercury levels. This is unfortunate because these reports only add confusion to the issue. In some of these studies, the so-called "mercury sniffer" has been used as an analytical instrument. It was designed as a survey instrument and requires laminar air flow over the sensor to function even at this low level of accuracy. The "sniffer" is also very sensitive to temperature. The most reliable, specific methods for measuring mercury levels are flameless atomic absorption spectrophotometry and particle activation analyses. In some instances, radioactive ^{208}Hg has been used to good advantage.

The source of the sample used to determine mercury levels within the body is another problem and for best results must be matched to the form of mercury involved. Urine seems to be the most reliable sample for elemental mercury exposure. However, the renal clearance of mercury is affected by chronic mercury exposure. Hair and nail samples are the most reliable for methyl mercury loads and for the assessment of accumulated elemental mercury exposures. The analytical techniques for determining the mercury content of hair and nails are most difficult. Blood levels of mercury are not very useful. Chloroalkali workers who had clear symptoms of mercury poisoning frequently had normal blood mercury levels (Goldwater, 1972). After the studies using questionable analytical or sampling methods and small sample size are eliminated, only a few extensive studies are left for consideration. Some of these studies were made when amalgams having a higher mercury content than those presently used were placed in the subjects. The 1957 study of Frykholm in which he added ^{208}Hg to the amalgams is an often-cited example. A peak urine concentration of 0.02 to 0.04 mg/l was observed at 5 to 6 days after the placement of the amalgam restorations. The level of mercury in the urine returned to normal values within 6 to 24 days. Higher levels were observed when the amalgams were removed. Hoover and Goldwater (1966) found no evidence of an increased mercury load in 85 patients who had from 1 to 28 amalgam restorations each. In a more recent double-blind study, Ott and Kroncke (1981) found no difference in the urinary mercury concentrations of subjects with or without amalgam restorations.

The contribution of sources other than the amalgams, such as occupational exposure or a diet rich in fish, to the total body burden of mercury was not considered in any of these studies. These two factors would tend to give higher values for the mercury dose than would be given by the amalgams alone. In spite of these problems, the results from each of the studies indicate that mercury exposure of patients having amalgam restorations is minimal and well within the current safe limits, providing the proper precautions are used. Only in cases where a significant mercury burden from other sources exists, can the small contribution from amalgam restorations be a concern.

MERCURY PRECAUTIONS

There are several precautions that the dental practitioner can use to reduce the mercury load from amalgam restorations of his patients. Lining the cavity with two coats of varnish will reduce the transfer of mercury from the amalgam to the underlying dental tissue (Soremark *et al,* 1968). One coat of varnish will not completely coat the cavity. Ultrasonic con-

densers should never be used on amalgams because they generate a mercury aerosol that is inhaled and readily absorbed by the patient. This aerosol cloud also presents a danger to the operator (Chandler, Rupp & Paffenbarger, 1971). Similarly, care should be taken that amalgamation procedures are not scattering mercury from faulty capsules. Extreme caution should be used in removing previously placed amalgams because this process can produce high vapor (up to 2.5 mg/m^3) and particle concentrations (up to 12 mg/m^3) (Buchwald, 1972; Brune, et al, 1980). This removal should be done with a rubber dam in place, with water spray and with suction. This potential contamination is a potent argument against the replacement of amalgams with composites to reduce the mercury exposure.

A small fraction of dental patients may show some allergic sensitivity to dental amalgams (Brauer & First, 1982). This sensitivity may have developed from a number of sources such as dental amalgams, breaking a clinical thermometer or the use of mercurials like Mercurochrome (Nakayama, et al, 1983). If such a sensitivity is suspected, the necessary patch testing should be done by a dermatologist.

Dental Office personnel are at far greater risk of exposure to high levels of mercury than are patients. This potential problem can also be avoided if proper precautions are taken. Among the 23 dentists and their assistants surveyed by Buchwald (1972) the greatest potential was the contamination of hands after working with mercury or fresh amalgam. Respirable dust, in terms of total concentration and mercury content, was also significant. In one office the mercury vapor concentration was 0.17 mg/m^3. Nine of the subjects had greater than 0.05 mg/l mercury in their urine, representing a serious body burden. Accidental spills and the mercury spray from amalgamators (Jorgensen & Okuda, 1971) are additional hazards. Published studies and reviews offer practical guidelines for preventing the exposure of dental personnel to high mercury levels (Wells, 1973; Borkowski, 1974; Borkowski & Mazza, 1975; ADA, 1983).

Some studies conducted in North Carolina furnish examples of the potential hazards of high mercury levels to dental personnel and offer guidelines for mercury hygiene. Wells (1973) reported the detection, by an ophthalmologist, of an unusual pigmentation on the lenses of a dentist's eyes. Subsequently, excessive urinary mercury levels were detected, and the pigmentation was found on the retina as well. Within 6 months after the dentist was given medication to accelerate the elimination of mercury, his urinary level returned to normal, and the pigmentation diminished. This dentist was from the First Dental District of North Carolina. A survey of 15 additional dental offices in the Asheville area revealed that 4 of the 15 had mercury vapor levels as high as that of the dentist who developed the pigmentation. All 4 of these offices had carpeted treatment rooms. However, the dentists in these 4 offices did not have excessively high urinary mercury levels at the time of the survey.

To control the mercury contamination of a dental operatory, Wells recommended that ultrasonic condensing instruments be avoided, that as dry a mix of amalgam as possible be used, and that kneading the amalgam by hand be avoided. Mercury should be stored in tightly-sealed, unbreakable containers. The work surface should be limited and have an easily cleaned surface. Water spray and suction should be used when a dentist grinds on old amalgam. The floors of treatment rooms should be seamless and should not be carpeted. Borkowski (1974) and Brokowski and Mazza (1975) also recommended the removal of carpeting from areas where mercury is used. The latter study sampled the mercury vapor concentrations in the operatories of a four-dentist practice in Chapel Hill, North Carolina. Measurements were made near the floors, in triturator areas and drawers, and in the mercury storage area in the sterilization and tray preparation room. Additional measurements were made at the surfaces of the ventilation system filters to determine the potential for additional contamination from mercury droplets trapped by the filters.

Based on his surveys Borkowski made additional recommendations to ensure the minimal exposure of dental personnel to mercury vapor. A senior dental assistant should be in charge of mercury control and hygiene measures. Mercury should be stored in an uncluttered area designated only for mercury use. Drip trays should be used. Waste amalgam should be stored in tightly closed, nonmetallic containers under a water layer. Proper cleanup procedures should be used for spills and periodic maintenance. Commercial laundry services should be used for the smocks and aprons of personnel. Shoe coverlets or office-only shoes should be worn to limit the contamination of the home environment. The filters in the ventilation system should be changed at least quarterly. An exhaust fan in the suction pump room should be used daily, or at least weekly, to flush the air in the office.

The American Dental Association periodically publishes a summary of recommendations for mercury hygiene in the dental office. Similar to the recommendations given above, the ADA guidelines also encourage periodic urinalysis for mercury on all dental office personnel and the disposal of mercury-contaminated items in sealed bags (ADA, 1983).

Perhaps of more practical importance to dentists in North Carolina is a mercury testing service available through the Occupational Health Branch of the Division of Health Services, North Carolina Department of Human Resources.

Periodically, personnel from this Department contact dental offices throughout North Carolina to arrange appointments for mercury assays. If your office has not been surveyed for mercury vapor levels, you should contact the Occupational Health Branch in Raleigh to arrange to have your office surveyed. After the survey, the person who conducted the survey, usually an industrial hygienist, will send a written report summarizing the results and including recommendations for controlling contamination. This service is performed without charge and constitutes an important safeguard against the exposure of dental personnel to unsafe levels of mercury.

CONCLUSIONS

1. The possibility of toxic effects from mercury used in dental practice is real but, in normal circumstances, too low to justify eliminating dental amalgam from the dental practice.

2. Dental office staff are at greater risk than are patients. If care is exercised to minimize mercury exposure, only those individuals already heavily burdened with mercury from other sources are likely to be adversely affected.

3. Highest professional standards of care must be maintained within the dental office to prevent the occurence of acute exposures and to minimize chronic exposure. Particular attention should be directed to amalgam trituration and removal procedures.

4. A survey program is available in North Carolina to aid in the evaluation and the control of mercury exposure.

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Dean's Commentary

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One other thing I would have you think about this morning is your development as a professional person over the next several years. In addition to learning the technology and science of dentistry and the empirical arts associated with patient care, you have the parallel responsibility of becoming a professional person. Dentistry is one of the great professions in company with medicine, law and theology. What these professions have in common is that they are all predicated upon a university based education; they all have a commitment to research and the application of scientific principles to advancing the fields and thereby the services provided to their patients or clientele; they all are committed to the proposition that a professional person has the duty to continue learning throughout life; and they are all held together under this umbrella because each, at one time or another, accepts the personal responsibility for the welfare of a fellow human being. That is a significant trust placed in us by society in general, but as you will learn, most especially by individual patients.

Part of the process of gaining that trust comes about when we learn to appear and to behave as professional persons in all of our relationships. Whoever you are, whatever you are and wherever you are, you represent dentistry and this Dental School. That may be anywhere in this community, in all of its public places and in its watering holes as well. It certainly is in this medical center and in these dental facilities. We have patients in our midst every day. How you behave, how you appear, how you conduct yourselves with each other in the corridors and public rooms of this facility are very much a part of how dentistry is perceived by these people who come here for care. I urge you to keep that in mind as you begin today to build behavior patterns which will last throughout your professional life.

Permit me to close by inviting your attention to the other members of your class. Your beginning associations today will lead to the closest relationships you will ever develop, relationships which will sustain you throughout life. I commend you to each other. I commend you as a diverse group of people coming from a vast array of different experiences, who can help each other grow and enjoy life here and in the years beyond. Again I welcome you to the profession and without apology for these somewhat serious thoughts on your first day,
I wish you well.

Posterior Composite Restorations: An Overview of Materials and Technique

W. David Brunson, D.D.S.[1] and John R. Sturdevant, D.D.S. [2]

Dr. Brunson

Dr. Sturdevant

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INTRODUCTION

The profession of dentistry has entered an era of conservation and esthetic dentistry. Resin bonded fixed partial dentures, composite veneers, and diastema closure represent new treatment modalities with a conservative, esthetic emphasis. These conservative, esthetic treatment options have renewed the controversy over the use of composite resin to restore posterior teeth.

Some specific factors which have influenced the current increase in the use of composite resin as a posterior restorative material are: 1) increasing demand by patients for more esthetic restorations, 2) the marketing efforts of dental material manufacturers, 3) the continued improvement of the physical properties of composite resins, 4) the potential for adhesive restorative materials to strengthen the remaining tooth structure, 5) the develpment of better handling characteristics and light curing resin systems, and 6) the environmental and biological questions of mercury toxicity inherent with amalgam restorations.

A 1982 survey (Table 1) showed that 41% of the dentists in the United States were using composite resins in Class I restorations and 34% in Class II restorations. This article briefly explores the history of posterior composite restorations, materials presently marketed for posterior restorations, advantages and disadvantages of these materials, techniques of cavity preparation, methods of placement and finishing, and some ideas on the future of composite resins for posterior restorations.

Table 1.
Composite resin usage in the U.S.A.*

	% of dentists	
	Class I restorations	Class II restorations
Composite not used	57	66
Light cured composite	22	16
Two-paste composite	19	18
Unspecified	2	–

*CRA, 1983.

HISTORY

The use of composite resin for Class I and Class II restorations was introduced in the United States in the mid 1960's. Following *in vitro* laboratory tests and short term clinical studies, the desirable characteristics of these materials

were identified as high fracture resistance, good marginal integrity, esthetic quality, high resistance to wear, low thermal conductivity, absence of tarnish and corrosion, and the completion of the restoration in a single appointment. (Phillips et al., 1972) After approximately two years, however, failures of these materials began to occur including color instability, excessive wear occlusally and proximally, microleakage, and recurrent caries. (Leinfelder et al., 1975)

During the 1970's improvements were made in the physical properties of composite resin and further refinements were made in their insertion techniques. Laboratory tests and short-term clinical studies gave encouraging data on improved color stability, and reduced micro leakage, wear, and incidence of recurrent caries. Longer term clinical trials once again indicated that the composite restorations lost contour in high stress areas, especially evident on occlusal surfaces after approximately two years of service. (Leinfelder et al., 1975)

Advances in resin polymer chemistry and better understanding of the modes of failure have led to the current resurgence in the use of composite resin material in posterior teeth. The introduction of radiopaque fillers, smaller particle size, increased loading of filler, reduced porosity, reduced water sorption, and light polymerization are factors in the increased usage in the 1980's. It must be emphasized, however, that the A.D.A. Council on Materials, Instruments, and Equipment has not approved any composite resin as a viable substitute for amalgam or gold in Class I or Class II cavity preparations.

MATERIALS

The success and failure of posterior composite restorations are influenced by three factors: 1) the physical properties of the composite resins, 2) the clinical technique of the dentist, and 3) the oral environment in which the restorations are placed. Table II lists products advocated by dental manufacturers for use in posterior teeth. These products vary in color matching, color stability, surface texture, radiopacity, and resistance to wear. By and large these characteristics are related to the filler particles, the amount of porosity in the material, and the method of polymerization.

Filler Particles

The size, hardness, and loading of the filler particles are critical factors in the wear resistance of composite restorations. The earlier composite resins (such as Adaptic) contained densely concentrated large quartz filler particles of 15-25 microns in size. These resins exhibited extreme wear after relatively short periods of time due to the harder quartz particles transferring occlusal forces to the softer resin matrix resulting in a phenomena termed "plucking". (Leinfelder, 1981) As the softer resin matrix cracked, the filler particles would fall out resulting in rapid surface deterioration and wear. Manufacturers of composite resins soon reduced the size and hardness of the filler particles. It was theorized that the smaller, softer filler particles would absorb some of the occlusal forces rather than transmitting them into the matrix. These softer particles tend to be fractured or abraded with minimal fracturing effect on the resin matrix.

Porosity

Porosity within a composite resin is associated with the process of manufacturing the material, mixing components before insertion, insertion of the material, or combinations of all three. Studies have shown a positive correlation be-

Table II.
Posterior Composite Materials

Product	Company	Type of Filler	Particle Size	% Loading by Weight	Polymerization
Adaptic	J & J	Quartz	large	75	auto
Profile	S.S. White	Strontium glass and collodial silica	large	78	auto
Isomolar	Vivadent	Collodial silica	micro	56	auto
Bis-fil II	Bisco	Strontium glass and collodial silica	fine	85	auto
Class II	Den-Mat	Strontium glass	fine	82	auto
P-10	3M	Quartz	fine	83	auto
Marathon	Den-Mat	Barium glass & silicate	fine	83	auto & light
Heliomolar	Vivadent	collodial silica	micro	67	light
Bis-fil I	Bisco	strontium glass and collodial silica	fine	85	light
Estilux Posterior	Kulzer	Silicate	fine	77	light
Ful-Fil	L.D. Caulk	Barium glass collodial silica	fine	78	light
P-30	3M	Zinc glass	fine	86	light
Visiofil	Espe-Premier	Quartz	fine	78	light

tween high levels of porosity, and increased rate of wear. (Leinfelder, 1981) The exact nature of this wear is unknown, but it is speculated that as the resin matrix wears, areas of porosity are exposed and occlusal force on the edges of the porosity rapidly fractures away the material. Manufacturers are incorporating fillers and blending monomers under vacuum in attempts to reduce porosity.

Polymerization

The light-cured composites, while they involve the extra step of curing, require no mixing of components. The step of mixing in the auto-cured process increases the potential for introducing air into the material which is related to increased rates of wear and surface staining. (Wilder et al., 1983)

CLINICAL TECHNIQUE

A major consideration in the successful use of composite materials in posterior restorations is the clinical technique employed by the dentist. This technique is very sensitive and not as forgiving as with dental amalgam. Technique steps which require exact detail and alteration are: occlusal evaluation, moisture control, preoperative wedging, cavity preparation, dentinal protection, enamel etching, bonding agents, contour of the matrix, material placement, finishing, and recall evaluations.

Occlusal Evaluation

As with any restoration, careful attention to occlusion is important with composite restorations. With posterior composites this is ever more important considering the tendency for extreme occlusal wear in high stress areas. Maintaining occlusal contacts on areas of sound tooth structure seems to be an effective way to reduce this wear. Use of composite resin in teeth that have heavy wear facets or in patients who have a history of bruxism should be avoided.

Figure 1.
Tooth with a faulty amalgam restoration with recurrent caries and questionable esthetics. Occlusion is favorable for replacement with a composite resin restoration.

Figure 2.
Properly contoured and wedged matrix band demonstrating crimping of the distolingual edge to contain the resin material at insertion. This will prevent the need for excessive finishing.

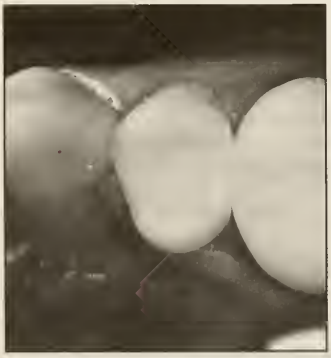

Figure 3.
Completed composite resin restoration at 6 months recall evaluation.

Moisture Control

Isolation by rubber dam provides necessary moisture control and allows optimal visibility. Such isolation provides better assurance of an uncontaminated field for successful etching and bonding of the composite resin.

Preoperative Wedging

To allow adequate displacement of the teeth as well as protecting the interdental papilla, preoperative wedging is suggested. Since most composite resins are inserted passively without condensation, this procedure is necessary to attain sufficient tooth separation to compensate for the thickness of the matrix band and achieve proper proximal contact.

Cavity Preparation

Most favorable results are seen in posterior composite restorations of small size. Cavity preparations for composite resins should be as conservative as possible, removing only the old restorative material or the carious tooth structure. Replacement of large amalgam restorations or capping cusps should be avoided due to the extreme wear seen in high stress areas. Preparation of retentive undercuts in sound dentin is unnecessary if sufficient enamel is present for bonding.

To increase the surface area of enamel available for bonding and to allow for the more favorable end-on etching of enamel rods, a light occlusal cavosurface bevel is advocated. (Sockwell, 1976) This bevel should be prepared with a medium or coarse diamond instrument and be approximately 0.5 mm in width. This beveling of the occlusal margins has the disadvantages of making the restoration more difficult to finish back to margin and makes evaluation of surface wear more difficult to detect in the earlier stages. Beveling of the proximal cavosurface margins is not as strongly advocated since there is often little enamel available for etching on the gingival floor.

Dentinal Protection

Protection of the exposed dentinal processes from the toxic properties of composite resins is imperative in the use of composite restorations. Adequate coverage of exposed dentin can be accomplished by using a calcium hydroxide product; however, it is important to prevent acid "washout". Most of the new formula calcium hydroxides are resistant to this effect.

Enamel Etching

Concentrations of 30-40% phosphoric acid will insure adequate etchting in the preparation of the enamel for the composite material. The length of time for the application of the etchant is generally one minute. However, 2-3 minutes could be necessary for heavily fluorosed enamel and is always necessary for deciduous enamel. Most dentists will find that the use of an etching gel is easier to control than the more fluid liquid preparations. Washing the etched area for 15-30 seconds is sufficient to remove liquid acid, but 45 seconds to one minute is required when acid gel is used. The etched enamel surface should present a light frosted appearance and feel porous to an explorer tip.

Bonding Agents

Following the successful etching enamel bonding agents can be applied carefully to the etched enamel with a small brush. A light stream of air prevents pooling and removes excess bonding agents. "Dentinal bonding agents" are now being marketed by several manufacturers for use with their resin systems but little clincial research has been done on these products. Clinical studies on pulpal toxicity, microleakage, and bond strengths are questions which need to be addressed before these materials can be endorsed for routine use.

Matrix

"Light" or "open" proximal contacts are a common problem with composite resin restorations. Unlike amalgam which is condensed into the preparation and wedges the matrix band against the adjacent tooth, most composite resins are inserted passively. Some of the newer materials are being marketed as "condensable" but the best solution is preoperative wedging and a well-adapted contoured matrix.

Material Placement

Posterior composite resins may be inserted using either a syringe or hand instruments. Studies have shown that placement by syringe decreases the potential for internal porosity. (Leinfelder, 1981) Careful placement with a hand instrument and light condensation will also provide adequate results for the procedure. For larger preparations, light cured materials must be placed in small increments (2-2.5 mm) to insure proper polymerization by the light source.

Finishing

Finishing of the posterior composite resin is undoubtedly the most frustrating and difficult step in the procedure. Most finishing instruments can easily damage tooth structure during the finishing process. Proper finishing provides a smooth, well-adapted surface which prevents plaque accumulation and fracture of weak excess material extending beyond the margin. Gross excess is best removed by found and flame shaped 12-fluted carbide finishing burs. Final marginal finishing is best accomplished with carbide hand instruments or superfine diamonds. Polishing and smoothing may be completed by using discs, strips, and various polishing points.

The most difficult areas to finish are the proximal gingival margins and the facial and lingual embrasures of the restoration. Meticulous attention to the adaptation of the matrix band is an essential step to minimize the need for extensive finishing in these areas.

Recall Evaluations

Regular recall evaluations are very important for posterior composites to detect recurrent decay and evaluate wear. If the marginal seal is broken, recurrent decay can progress quite rapidly under the restoration and can be difficult to evaluate clinically or radiographically unless a radiopaque material is used. Clinical complaints of sensitivity to hot or cold fluids could indicate early micro-leakage of the restoration. The most common area where this microleakage occurs is at the proximal gingival margin due to the small amount of enamel available in this area for bonding. Wear is also difficult to detect clinically in the early stages. Making an impression and a stone cast of the restoration at each recall visit has been found to be helpful in detecting early surface wear.

FUTURE OF POSTERIOR COMPOSITE RESIN RESTORATIONS

Some clinicians are already offering their patients a choice of either amalgam or composite resins when restoring posterior teeth. Some are removing all amalgam restorations and replacing them with posterior composites. Due to composite resins' capacity to bond to tooth structures and hopefully strengthen remaining weak tooth structure, the future for this material would seem bright. However, to date no clinical trial has established a composite resin material which resists occlusal wear sufficiently to replace amalgam or gold restorations for posterior teeth. The increased knowledge of the modes of failure of these materials may lead to a composite material that may be utilized in these restorations.

In addition to the material qualities of composites, more research must be done with cavity preparation and dentin bonding agents. Most studies have used conventional amalgam preparations

to study posterior composites. Smaller, more conservation preparations may be utilized and need to be studied as to their effect on the suitability of this treatment. Dentin bonding agents also need additional assessment before their use can be recommended without reservation.

Composite resins presently marketed for use in posterior teeth provide a relatively new treatment option for the dentist in those cases where the esthetic demands of the patient are extremely high. Their use should be limited to those situations where the cavity size is small, occlusion is light or entirely on sound tooth structure, and when the patient is highly motivated towards maintaining good oral hygiene and regular recall appointments. The patient must be informed that the composite restoration will, in most cases, fail due to occlusal wear long before a similar amalgam restoration. For success, posterior composites require exacting attention to detail in cavity preparation, moisture control, matrix adaptation, and in the tedious finishing procedures. They cannot be substituted for amalgam restorations in all instances, but in select cases they can provide a broader range of treatment options for the dentist and esthetic restorations for the patient.

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IN MEMORY

Dr. Claude R. Baker
1911-1984

Dr. Claude R. Baker was a Professor of Dentistry for 30 years. He earned three degrees and taught in five state universities from 1935 until 1969. Since 1969 he has been Professor Emeritus from the University of Missouri. He was Professor and Chairman of the Department of Crown and Bridge at the UNC School of Dentistry from 1950-1958.

Dr. Baker is survived by his wife, Virginia, four children, twelve grandchildren, and one great grandchild.

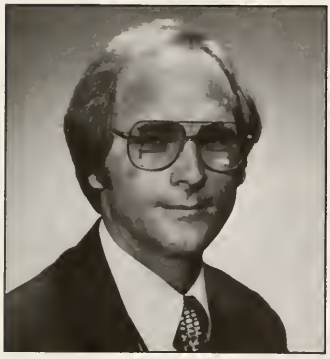
Dr. Baker is buried at Hillcrest Memorial Gardens at Las Cruces, New Mexico.

Mrs. Baker's address is 1101 E. Boutz, Apartment 39, Las Cruces, New Mexico 88001.

The Esthetic Full Crown: *State of the Art*

C. F. Brantley, D.D.S.[1] and W. D. Sulik, D.D.S., M.S.[2]

Dr. Brantley



Dr. Sulik

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INTRODUCTION

The number of materials available to the dental profession for the fabrication of crowns and fixed partial dentures has reached rather confusing proportions. A recent survey has determined that 81% of all fixed prostheses placed in the United States are fabricated of porcelain-fused-to-metal. (Band Research, Inc.) A conservative estimate of the number of porcelain-fused-metal alloys available to the profession would be well into the hundreds.

Becker, and Johnston and Associates first reported on the technique of bonding porcelain to gold alloys in 1956. In 1962 Weinstein, Katz, and Weinstein patented specific alloy and porcelain compositions which lead to porcelain-fused-to-metal restorations assuming a position of "State of the Art" in fixed prosthodontics. Early ceramic alloys were composed primarily of gold with platinum and palladium. Clinical problems related to these alloys stemmed from a low modulus of elasticity, low creep values, a coarse grain structure and variable porcelain-metal bond strengths.

In 1968 gold-palladium-silver ceramic alloys were developed to overcome some of these problems. (Tucillo and Cascone, 1984) These alloys had improved mechanical properties, greater thermal stability, better handling properties, a lower density, and were less expensive. The introduction of base metal alloys for use in fixed prosthodontics was also marked in 1968. Palladium-silver ceramic alloys were introduced in 1974. The development of these newer alloys was stimulated by a desire to provide a less expensive alloy with superior physical properties, reliability and good bonding potential. By 1979-80 the price of gold had reached $850.00 an ounce and the profession was clamoring for a reasonably priced, quality alloy. This dramatic rise in the price of gold caused the dental market place to be flooded with all types of alloys and the effectiveness of many of them was not substantiated by competent research and development. By 1980 there were at least 268 base metal alloys on the market. Furthermore, the profession was confused by terminology such as noble metal, precious metal, semi-precious metal and non-precious metal. It was becoming very difficult for clinicians and the dental laboratory industry to decide "what was what". (ADA Council Reports, 1981)

In November of 1981 the American Dental Association's Council on Dental Materials, Instruments and Equipment published a report classifying and defining alloys used as casting substrates for porcelain veneering. The Council attempted to eliminate some of the existing confusion by classifying alloys on the basis of their noble metal content. This classification appears in Table 1. These classifications will be briefly described citing the advantages and disadvantages of each group of alloys based upon our experience and research. Table 2 provides a cost comparison of the various alloy groups.

Approximately 20% of the work done in the ceramics laboratory at the UNC-CH School of Dentistry is with a high noble metal content alloy containing gold and palladium (Olympia, Penwalt Jelenko). The advantages of this alloy are technical and clinical predictability, good physical properties and good bonding potential. Their disadvantage is cost.

Approximately 75% of the work done in the Ceramics Laboratory at the School is with a medium noble metal content alloy containing gold, palladium, and silver (Cameo, Penwalt Jelenko). Technically and clinically this alloy is comparable to the high noble metal content alloy mentioned above. Although this alloy does contain silver, manufacturers have overcome its tendency to discolor porcelain.

It is estimated that the most widely used porcelain-fused-to-metal alloys are those with a low noble metal content containing palladium and silver. (Band Research, Inc.) These alloys provide good predictability, mechanical properties, bond strength, and are reasonably priced. Here too, the alloy's silver content can potentially lead to porcelain discoloration but control of alloy formulation by manufacturers has minimized this problem.

The base metal alloys contain no noble metal and are classified into three groups (nickel-chromium with berylium, nickel-chromium without berylium and cobalt-chromium). The advantages of these alloys are their excellent physical properties and low cost. Disadvantages include potential environmental and health hazards for the patients and clinicians, technique sensitivity, and potential bond problems.

Table 1. Alloys intended for use as cast substrates for porcelain veneering

Classification	Wt %
High noble metal content	Au + Pt group 90
Medium noble metal content	90 Au + Pt group 70
Low noble metal content	Au + Pt group 70
Base metal (nonprecious)	Au + Pt group = 0

Table 2. Cost comparison of alloys classified in Table 1 with a gold price based at $428/oz.

Classification	Approximate Cost/oz.
High noble metal content	$329-$540
Medium noble metal content	$317
Low noble metal content	$ 85
Base metal (nonprecious)	$ 24

COBALT-CHROMIUM ALLOY

Over the course of the last several years the authors have conducted two clinical investigations utilizing base metal alloys. The first involved a cobalt-chromium alloy (Cobond, Dentsply International) and the second involved a nickel-chromium with berylium alloy (Biobond II, Dentsply International).

A recent research project followed forty Cobond restorations in twelve patients for a period not exceeding two years. The laboratory phase of the project posed several problems related to casting. The first problem involved heating the alloy to proper casting temperature. A heavy oxide build-up during melting prevented the alloy from flowing freely at casting temperature. This made it very difficult to identify the proper time at which to cast. If the alloy was underheated it would not flow and fill the mold cavity. When over-heated, some components of the alloy were burned off resulting in a change in alloy composition and, consequently, its handling and mechanical properties. Secondly, because of the alloy's high casting temperature (2,672°F) it was difficult to achieve adequate investment expansion to compensate for shrinkage of the alloy upon cooling. Adequate mold expansion could only be achieved by a hygroscopic technique. Finishing and polishing this alloy also proved to be problematic. A high polish could be achieved but it required additional time, effort, and the use of an industrial polishing compound.

Clinically, casting fit and periodontal response were found to be comparable to those obtained with the more conventional high and medium noble metal content alloys. There was no increased tendency for plaque accumulation and any inflammation present was related to the presence of bacterial plaque. Esthetic parameters were deemed acceptable by both the patients and the clinicians. Porcelain veneers on these restorations have remained intact without fractures or crazing. Probably the most outstanding feature of this alloy is its ability to maintain its polished lustre in the oral environment. Additionally, an attractive feature of this alloy is its biologic compatibility. It contains no nickel, which is a known allergen for 6-9% of the population, and no berylium, which poses hazards for the technical personnel who fabricate the restorations. (Prystowsky et al., 1979)

NICKEL-CHROMIUM WITH BERYLIUM ALLOY

In another clinical trial, forty-one Biobond II restorations were placed in nineteen patients and have been evaluated for one year. Prior to accepting any patients for this project the School conducted a nickel sulfate patch test as described by Blanco-Dalman to identify patients who might have a nickel allergy. Patients exhibiting such a sensitivity were excluded from this study.

The laboratory phase of this project posed fewer problems than did that of the cobalt-chromium project. This may have been partially related to the fact of more experience in working with base metal alloys in this second project. The casting process and the achievement of adequate expansion was relatively routine. Polishing presented the same difficulty as did the cobalt chromium alloy, but a high lustre was achieved.

Clinically, casting fit, and periodontal response were also comparable to those obtained with the more conventional high and medium noble metal content alloys. There was no increased tendency for plaque accumulation and inflammation was attributable to the presence of bacterial plaque. Esthetic parameters were acceptable. Two veneers, both of which were individual retainers for three-unit fixed partial dentures developed cracks after eight months. The etiology of those cracks is puzzling, but porcelain fracture is not an unusual experience for those who have used base metal alloys to any extent. They are simply not as predictable as noble metal alloys.

An additional problem frequently seen with base metal alloys is heavy oxidation which complicates soldering. Pre-porcelain and post-porcelain soldering of both the cobalt-chromium and the nickel-chromium with berylium alloys were accomplished with varying amounts of success. Consequently all connectors for fixed partial dentures in both studies were cast and not soldered. The soldering process was so tenuous that if a fixed partial denture could not be cast in one piece, it was not deemed suitable for the study. The longest span fixed partial denture was five units. All connectors remain intact to date.

In the opinion of the authors, base metal alloys are a viable option for fixed restorative treatment where the restorations would require maximum mechanical properties, particularly strength. Their major advantages are strength and cost. Technique sensitivity, potential for unexplained problems (porcelain fracture) and suspect biologic compatibility are all factors which must be considered when selecting an alloy.

ALL PORCELAIN CROWNS

Materials science is advancing rapidly in dentistry and the current focus of attention in Fixed Prosthodontics is on all ceramic crowns which are reported to have improved marginal adaptation, strength and esthetic properties over the traditional all porcelain jacket crowns. Although porcelain-fused-to-metal restorations are the current "state of the art," they possess certain limitations. Casting accuracy, framework distortion through porcelain firing cycles, color, translucency, and unattractive metal collars are only a few of the problems associated with the porcelain-fused-to-metal technique. All porcelain crowns were first introduced to the profession by Land in 1903. The use of the porcelain jacket crown has been limited due to its lack of precise marginal adaptation and the inherent weakness of dental porcelain. Nevertheless, the pursuit of an all ceramic restorations has continued because of their unparalleled esthetic potential. McLean and Hughes (1956) strengthened dental porcelain for porcelain jacket restorations through the incorporation of alumina; however, the problem of compromised marginal adaptation due to ceramic shrinkage during firing still persists.

Sozio and Riley (1983) described a technique for the fabrication of an all ceramic crown that utilizes a shrink free ceramic as a core substrate and an aluminous porcelain veneer (Cerestore, Johnson & Johnson). The core material is an alpha-aluminum oxide and magnesium aluminate spinal in the crystalline phase which provides the superior strength. Its formulation is such that upon firing, chemical and crystalline transformations occur which compensate for the shrinkage ordinarily experienced with traditional ceramics. By carefully controlling the time-temperature firing cycle, the ceramic can be fired from the green to the matured state with no shrinkage. Tooth preparation requirements are similar to those for ceramo-metal restorations except that a heavy chamfer finish line is recommended rather than a shoulder with a bevel. This system seems to have overcome the traditional deficiencies of marginal adaptation and strength inherent in all-ceramic restorations. The esthetic properites of the material are outstanding. Restorations of this type have been used clinically since 1982. There are no published data of controlled clinical investigations of these restorations, although reports presented by various clinicians at major dental meetings have been quite encouraging.

One drawback to this system that was encountered in the limited clinical experience at the School of Dentistry has been the complexity of the laboratory procedures involved in the fabrication process. As with other new materials and techniques, adequate training and experience are required for technicians to create restorations of exceptional marginal adaptation, color and translucency.

CASTABLE GLASS

The most recent all-ceramic restoration is a tetrasalicic micaglass ceramic material similar in composition to dental porcelain (Dicor, Dentsply International). The microstructure of this material incorporates a finely interlaced lattice of crystals approximately 1 micron in size. This feature imparts to the material its unique property of castability and accounts for its superior strength. The possibility of utilizing this castable ceramic in dentistry originated with Peter Adair, a dental laboratory technician from Boston. In conjunction

with the Corning Glass Works and Dentsply International this material has been undergoing extensive research for the past three years and is targeted to be marketed in the Fall of 1984. The authors have been involved in a pilot clinical research project utilizing this castable ceramic to fabricate three unit fixed partial dentures. Other investigators are conducting similar investigations with single crowns.

The technique is very simple. On conventional stone dies, a full contour wax-up is fabricated. This pattern is invested in a phosphate bonded investment and cast in the ceramic material. A motorized casting machine is required because, unlike metals, the melted glass has a thick honey-like consistency and it takes several minutes for the mold cavity to fill and the casting to be completed. The casting is recovered and has the appearance of clear glass. It is then invested in a gypsum investment and subjected to a "ceramming" process which converts the glass to a ceramic by initiating and controlling the growth of interlocking mica crystals. The "ceramming" process imparts the unique physical, mechanical and esthetic properties to the material. At this point the restoration has a frosted, translucent appearance and can be adjusted with conventional finishing stones. Missing contacts and minor contour discrepancies can be corrected with a low fusing add-on porcelain.

DICOR RESTORATIONS

Patient selection for Dicor fixed partial dentures is critical. A minimum of 5.5-6 mm of crown length is necessary to achieve adequate connector dimension and embrasure form. To ensure structural integrity of the restoration optimal dimension of tooth reduction on all surfaces must not be compromised. Suggested reduction is comparable to that of porcelain-fused-to-metal preparations and a heavy chamfer finish line should be employed (1 mm axial reduction at the level of the margin). Strict preparation requirements contraindicate these restorations for patients with short clinical crowns and/or large pulps. It has been the author's experience that only forty percent of the patients requiring a three-unit fixed partial denture will meet the Dicor criteria. As with the Cerestore system, tooth preparation for Dicor restorations should be rounded with no sharp edge angles.

Early experience with the castable ceramic have been positive. The gingival response to these restorations is outstanding. The potential for developing marginal adaptation has been shown to be comparable to that of metal crowns. (Adair and Hoekstra, 1982) The structural integrity of the restorations has been adequate to date, although more long term follow-ups will be necessary. The most outstanding feature of these Dicor restorations is their esthetic potential. The degree of translucency and vitality which can be achieved is unparalleled.

CONCLUSION

Dentistry has come a long way since the early days of gold castings with acrylic facings and is just now beginning to utilize the materials technology that is available in other industries. The ideal restorative material has yet to be discovered, and ten years from now castable ceramic crowns may be a thing of the past. The evolution and improvement of materials for the fabrication of esthetic, functional crowns and fixed partial dentures has been impressive. Research at the School of Dentistry will continue in these important areas.

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SPECIAL FEATURE

Locum Tenens: A New Method in Reducing the Stress of Dental Practice

Forest R. Irons, D.D.S.[1]

INTRODUCTION

"Locum Tenens" is the term used to describe the custom of using equivalent, substitute manpower for a given practice situation on an interim basis. While most people associate the locum tenens concept with manpower substitution for sudden illness, disability, or death, the concept is similarly applicable to situations in which a dentist might be away from the office for a routine or extended vacation. The concept has excellent possibilities to assist a dentist in avoiding a negative cash flow, which might otherwise be reason to forego a needed vacation or respite from the rigors of a busy practice.

The locum tenens concept is not new but North Carolina's Chapel Hill-based company, Forest Irons and Associates, is currently one of only two locum tenens dental services in the United States. This is surprising because utilization of temporary manpower is widely embraced in England, Australia and New Zealand by all the health professions. This concept has also proven to be very appealing to physicians and pharmacists in this country.

HOW LOCUM TENENS WORKS

Imagine having an associate who is around only when needed, who works in a nearly identical fashion as you, who presents no threat of competition, who supports all of your office policies, who praises you to your patients, and who would appear only when needed. These features represent the essential characteristics of high quality locum tenens providers.

The conventional transaction for a locum tenens agreement is based on an hourly rate, but in some cases a percentage of production may be the guideline. Contracts are structured to protect the practice interests of the owner.

Individuals who serve in the capacity of locum tenens provider must be professionally competent. Furthermore, the flexibility required to immediately adapt to a variety of practice techniques and philosophies is generally found only with experienced dentists.

After an individual has been designated for a practice, the success of the locum tenens concept rests with the office and its staff. The staff plays an essential role in orienting the provider to the practice and in offering insight into the treatment style of the dentist-owner. Patient records and observation of existing care are also valuable ways of bringing the temporary dentists into the established patterns of care provided in the practice. Of course, a lengthy dialogue between locum tenens provider and owner is more productive; however, this may not always be possible in an emergency situation. In brief, the ultimate goals of a locum tenens arrangement is to maintain as constant as possible the office routine of the dentist-owner.

Continuity of care is an important part of maintaining patient satisfaction in any dental practice. Patients usually choose specific dental care providers for a wide variety of reasons. Once they have selected an environment in which they are comfortable, they consciously or subconsciously draw security from this environment. Support for this conclusion is evidenced by the high patient retention rates observed when dental practices abruptly change hands.

STRESS MANAGEMENT

Stress-related illness and self-inflicted death have been said to be high among the professionals, especially dentists. Exploring various methods to manage the tension and stress of dental practice has been a priority of many practitioners for years. Most psychologists feel that taking time away from the office on a regular basis is an important part of any comprehensive program of

[1]*Director of* Forest Irons and Associates; *former Assistant Professor of Fixed Prosthodontics at Emory University School of Dentistry and most recently at the University of North Carolina at Chapel Hill School of Dentistry.*

Figure 1. FIGURES SELECTED TO DEMONSTRATE A VARIETY OF SITUATIONS

	Average Weekly Production	Weekly Practice Overhead	Percent Fixed Practice Overhead	or	Weekly Cost to Close Office	Weekly* (Loss) Gain With Locum Service	Net Weekly Savings
PRACTICE A	$3,600	$2,340 (65%)	55%	=	($1,287)	-($180)	$1,107
PRACTICE B	4,900	2,450 (50%)	43%	=	(1,053)	+ 650	1,703
PRACTICE C	3,200	1,952 (61%)	55%	=	(1,074)	-(192)	882
PRACTICE D	7,800	5,850 (75%)	40%	=	(2,340)	+ 350	2,690
PRACTICE E	2,500	1,500 (60%)	60%	=	(900)	-(280)	620

*Locum Tenens fees are somewhat variable.

maintaining one's mental and physical health. However, a planned absence is often accompanied with a decrease in revenue and this makes such absences a luxury for many dentists. Thus, the replacement dental manpower may make possible a planned vacation. It may also permit a less-demanding workload for the dentist who might otherwise work overtime to make up the expected revenue losses which would be expected when a vacation is taken.

When factoring stress levels in dentistry, consideration must be given to out-of-office tension as well as that experienced when the practitioner is in the office. For example, the longer one is away, concern for lost revenue and lost patients may increase. It is not surprising that lack of leisure time, failure to enjoy such time, or inability to relax are common complaints of dentists.

LOCUM TENENS AND DISABILITY

An important characteristic of any dental practice is its vitality, and vitality is seriously threatened by the disability of the practitioner. While never leaving one's office may eliminate concerns associated with lost revenues, the added stress may help precipitate a sudden, extended absence. The availability of a locum tenens resource provides a kind of insurance against emergency situations which can complement both disability insurance and overhead insurance. Disability and overhead policies are essential but make no provision for practice continuity. Through locum tenens, practice income and patient care levels may be maintained.

In lieu of a locum tenens option, a practice can be kept maintained by colleagues, although such arrangements often accomplish little more than a marginal operation for the dental practice. While this is an admirable endeavor on behalf of colleagues, the utilization of locum tenens seems preferable to that of using multiple dentists, who may also be competitors. The added strain on those individuals over a period of time may also be a consideration in favor of locum tenens.

FINANCIAL IMPACT

Health manpower projections indicate that competition in the delivery of dental care is increasing. The movement to the Sunbelt by new or experienced dentists, many of whom are attuned to the importance of marketing, will continue to have an impact on practice patterns for years to come. A means to help maximize income potential while decreasing stress levels may help the dental practitioners be more responsive to the changing practice environment. Examples of various practices (see Figure 1) demonstrate the potential of temporary manpower in terms of dollars. While difficult to measure, the accompanying reducing of "down-time anxiety" is significant consideration.

Clearly, the solo practitioner realizes the biggest loss when an office is down. Lost revenue of $2,500 to $7,000 per week might occur and that loss is not a desirable situation for any small business. The average fixed overhead cost (loss) per week of closing a general practice for any reason is $1,250. The average gain (loss) per week when using replacement manpower is $85.

As previously noted, locum tenens coverage is most applicable to solo general practices. While no practice can afford to be closed indefinitely, some practices do not generate sufficient income to make temporary practice coverage service feasible except in emergency situations. Other circumstances, including locum tenens for some specialty areas, may not be applicable.

SUMMARY AND IMPLICATIONS

Implementation of the locum tenens concept for dentistry appears to be timely. Advantages include (1) Contingency planning for sudden absences may be secured; (2) Conventional two-week a year vacation schedules may be lengthened; (3) Overextending oneself may be reduced; and (4) While paying substantial health and fitness dividends, a decrease in stress and tension levels may increase enjoyment and lengthen practice years. Although not a panacea, locum tenens can help allay some of general dentistry's inherent stress problems. The ultimate benefits to the individual practitioners and the profession are yet to be determined. Based on experiences to date, the outlook is very promising.

Continuing Dental Education CALENDAR

University of North Carolina School of Dentistry

1985

Date, Course Title, Lecturer, Cost, Credit, Synopsis

MARCH

March 15, 1985
Clinical Evaluation of Restorative Materials, Dr. Karl Leinfelder, University of Alabama, Guest Lecturer, Cost: Dentists $110.00, Auxiliaries $55.00, Credit: 7.2 hours, Synopsis: Since rapid changes have occurred in dental materials used in restorative dentistry, the majority of restorations fabricated today are made with products that were not on the market five years ago. Progress is occurring so rapidly that the private practitioner finds it difficult to stay abreast of current research findings regarding improvements in materials and techniques. In this presentation, the clinician will discuss the background, properties, and clinical performance of various restorative materials and will stress their uses in private practice. Particular emphasis will be placed on clinical evaluation of composite resins in posterior teeth, microfilled resins, dentin bonding agents and freehand veneering. Also, current research dealing with the Maryland Bridge will be discussed. The results of numerous clinical studies will also be presented.

March 15, 1985
Human Relations in the Dental Office, Ms. Linda Stewart, Department of Operative Dentistry, Cost: Dentists $55.00, Auxiliaries $55.00, Credit: 7.2 hours, Synopsis: Every dental practice is a social system involving the dentist, dental auxiliaries, and patients. Many apparent office problems are actually conflicts among people, or human relations problems. One's ability to handle these problems constructively and work harmoniously with others is essential to success, and of particular importance in the group or affiliate practice setting. This seminar is designed to improve interpersonal relations through increased self awareness and application of appropriate communication strategies.

March 22, 1985
Methods to Improve Complete Denture Service, Dr. Matt Wood and faculty of the Department of Removable Prosthodontics, Cost: Dentists $110.00, Auxiliaries $50.00, Credit: 7.8 hours, Synopsis: The method of teaching will be by lecture. The participants should expect to receive a thorough review of complete denture construction procedures with emphasis on the correction of common faults. Complete denture/partial denture cases and related techniques will be discussed as well as the handling of cases with severe alveolar bone loss. Participants are encouraged to bring cases and x-rays of problem cases. Outline: 1) Impression Techniques, 2) Intermaxillary Relations, 3) Tooth Selection, 4) Complete vs. Partial Denture; 5) Soft Reline, 6) Trouble Shooting Denture Problems.

March 28-29, 1985
Minor Periodontal Surgical Procedures, Dr. George Greco and Dr. L. H. Hutchens, Jr., Department of Periodontics, Cost: Dentists $300.00, Credit: 7.8 hours, Synopsis: This course is designed to teach *basic* periodontal surgical skills that will be helpful in the treatment of minor periodontal problems and that will facilitate restorative dentistry. Biological principles of flap design, crown extension procedures, suturing techniques and dressing placement will be covered. The course is a combination didactic and participation course and each participant will carry out surgical procedures in the laboratory on a surgical teaching dentoform. (Preference given to those who have taken: 1) "How I Can Put Periodontics in My Practice Now," 2) "Scaling and Root Planing for the General Practitioner," and/or 3) Other periodontal department courses previously). ENROLLMENT LIMITED.

March 29-30, 1985
Orthodontics and the Special Patient: Current Therapy for Craniofacial Anomalies and Clefts, UNC Faculty (Department of Orthodontics and OFCD Program), Cost: $295.00, Credit: 15.6 hours, Synopsis: Considerable progress has been made in the past decade both in understanding how craniofacial anomalies develop and in improving treatment. The objectives of this course are to provide a broad update for orthodontics and to discuss in detail the orthodontic management of patients with hemifacial microsomia and other craniofacial syndromes as well as cleft palate. Topics to be covered include: 1) Current concepts in development of craniofacial anomalies, 2) Surgical and orthodontic management of facial syndromes, 3) Overview of current cleft lip and palate treatment, 4) Orthodontic considerations and procedures, 5) Alveolar bone grafts, 6) Orthognathic surgery in cleft patients.

APRIL

April 5, 1985
Esthetic Considerations in Fixed Prosthodontics, Dr. William D. Sulik, Department of Fixed Prosthodontics, Cost: Lecture only–Dentists $110.00, Auxiliaries $55.00, Lab Technicians $75.00; Optional Participation–Dentists $110.00, Credit: Lecture session 7.8 hours, Optional Participation 6 hours in office and 7.8 hours presentations, Synopsis: This course is designed to provide the general practitioner and laboratory technician with a comprehensive understanding about how to maximize the esthetic and functional potential of anterior crowns and fixed partial dentures. Topics will include treatment alternatives including the newer all ceramic restorations, tooth preparation, framework design, pontic design, recognizing and establishing appropriate contours, shade selection, and staining. At the second session (date to be determined at initial session), the D.D.S./D.M.D. participants will make

case presentations of a patient treated in their office involving at least two anterior restorations.

April 13, 1985
Dental Alumni Day, Synopsis: The Twentieth Annual Dental Alumni Day will feature a series of concurrent clinical programs to be presented by various clinicians representing the UNC faculty and practicing dentist community. Student table clinics will also be presented featuring the latest in research projects and clinical techniques. The morning will conclude with the Annual Meeting of the Dental Alumni Association and the election of officers and directors for 1985-86. The afternoon activities will feature the Annual School of Dentistry picnic where students, faculty and alumni can join in the fun-filled afternoon of events. The Class of 1988 will serve as the hosts for this activity. The day will conclude with a reception at the Carolina Inn honoring the reunion classes of 1955, 1960, 1965, 1970, 1975, and 1980. Everyone is invited to participate. For registration information, contact the Office of Institutional and Professional Relations, 1-800-722-1355 (NC residents) or (919) 966-4563.

April 18-19, 1985
Rigid Fixation for Oral and Maxillofacial Surgery, Dr. Bill C. Terry and Faculty of the Department of Oral and Maxillofacial Surgery, Cost: Dentists $450.00, Credit: 7.8 hours, Synopsis: The use of compression and non-compression plating systems in oral and maxillofacial surgery is enjoying a renewed, global interest. Improved metallurgical and engineering processes have resulted in devices that are tissue tolerated, adaptable to conditions found at surgery, and will satisfy basic surgical principles related to bone fixation and stabilization. This course will examine the use of the rigid and the less rigid bone plating systems by the oral and maxillofacial surgeon in the management of trauma, for enhanced bony stabilization in orthognathic surgery, and in reconstructive procedures following resections for tumors or management of post traumatic defects. There will be a laboratory session in which each participant will practice placing compression and non-compression plates on a plastic facial skeleton. These laboratory materials will be retained by each individual enrolled in the course. Participants are also encouraged to bring problem cases (radiographs, clinical photographs, models, etc.) for suggestion as to treatment selections by the faculty. ENROLLMENT LIMITED.

April 26, 1985
Practice Building, Dr. Charles Milone and Dr. Jim Littlefield, Department of Dental Ecology, Cost: Dentists $100.00, Auxiliaries $50.00, Credit: 7.2 hours, Synopsis: Practice building, so necessary for every modern dental practice will be dealt with in some detail. The increased number of dentists and the reduction in dental disease call for effective practice building for both new and established dentists. This course is designed to help dentists and their staffs to attract and keep a desirable number of patients. Methods of community and practice analysis will be presented that will enable dentists to effectively attract people to their offices. We will present proven methods of dealing with new and established patients and working effectively with them so that they accept optimum dental treatment. Staff involvement, so essential to practice building will also be presented. Overall, the course will be a presentation and discussion of methods for building a practice by attracting and retaining patients.

MAY

May 3, 1985
Controversies in Periodontics, Guest Speaker: Dr. J. Max Goodson, Sponsored by the Department of Periodontics as part of their Distinguished Speaker Series, Cost: Dentists $125.00, Auxiliaries $50.00, Credit: 7.8 hours, Synopsis: Dr. Goodson is internationally known for his outstanding research. He is a Professor at Forsyth Dental Center in Boston, Massachusetts. This course explores the episodic concept of periodontal disease and its impact on clinical dentistry. Topics include the natural history of periodontal disease, methods of diagnosing an episodic disease condition, therapeutic evaluation and frequency of patient maintenance; and use of systemically and locally administered drug therapy. This is a new approach to periodontal therapy with significant future ramifications in control of periodontal disease.

May 17-18, 1985
Update in General Practice '85, Dr. Lawrence Scheitler, Sponsored by the Office of Institutional and Professional Relations, Division of Continuing Education, Cost: Dentists $265.00, Credit: 16.2 hours, Synopsis: This course is intended to be an *INTENSIVE* update in the general practice of dentistry, with particular emphasis to be placed on recent advances in dentistry. The design will be such that the general dentist preparing for the AGD Fellowship or Mastership Examinations will receive a systematic review (overview) of much of the material necessary to pass the examination. This course is also designed to help prepare the GDR (Federal Dental Services) resident for the Federal Dental Services Board (both written and orals). The general dentist in practice who needs an overview of recent advances in dentistry, as well as, a review of up to date techniques/literature, may find this two-day intensive review particularly helpful.

JUNE

June 19-23, 1985
The Second Annual Dental Review—Come Learn at the Beach!, Presented by the Department of Operative Dentistry, Location: Ocean Dunes Resorts and Villas, Myrtle Beach, S.C., Cost: Dentist $150.00, Auxiliaries $85.00, Credit: 16.2 hours, Synopsis: Recent advances and developments in dentistry have dramatically changed dental health care delivery for the dental practitioner. The purpose of this course is to provide vital information on a variety of topics that can be immediately used by today's dentist. In a series of "mini-clinics," noted clinicians from the Department of Operative Dentistry wil present current material regarding new composite materials, efficient use of four-handed dentistry, current concepts in cosmetic dentistry, posterior composite restorations, and other new philosophies and techniques of conservative restorative dentistry. Also included will be valuable information on stress reduction and physical fitness for today's dentist. Particular emphasis will be placed on the clinical application of the information and techniques presented.

OTHER

3-4 times yearly (1 week)
October 1-5, 1984
December 10-14, 1984
Orthognathic Surgery Mini-Residency, Dr. Ray White and Faculty, Department of Oral and Maxillofacial

Surgery, Cost: $1,500.00, Credit: 52.2 hours, Synopsis: Here are some pertinent facts about the program: 1) Attendance requires Board certification or eligibility; 2) We attempt to schedule two-four surgeons for each Mini Residency; 3) Cases are scheduled emphasizing the information desired by the mini resident, thus major orthognathic or major preprosthetic and reconstructive surgery are presented separately; 4) One faculty member is assigned to the mini resident each day until after evening rounds; 5) We request you arrive to spend Sunday evening here and the course will allow you to depart by late Friday afternoon or Saturday morning; 6) The Mini Residency is a formal continuing education course offered through our Continuing Education office. There is a fee of $1,500.00. The C.E. Office will make room reservations. You are responsible for room and meal expense during the week; 7) The North Carolina Dental Practice Act precludes the mini resident from playing a major role in surgery, but you may scrub on the surgical cases or observe and circulate as you like. You are encouraged to bring any problem cases (models, cephs, etc.) you wish to discuss; 8) Our Health Sciences Library is available to you for the week; 9) Please call Ms. Terri Minor (919) 966-2729 for additional information; 10) We encourage your orthodontist to attend with you. Please discuss the orthodontist's participation with Ms. Minor when you call for registration. We attempt to concentrate requested cases for any particular week and to schedule a course to fit the desires of the practitioner. Patient cancellation could be a problem at any time and some Operating Room times may be preempted for emergencies. These are not likely, however. We usually have six cases scheduled. There may be more or less depending on complexity and length. The Mini Residency is a very arduous week with very long daily hours. Our mini residents have been very pleased by our efforts, but it is a tough week for us too. Therefore, we schedule only a few programs a year.

2 times yearly approx. 1 month prior to State Boards
Review for Clinical Dental Hygiene Practice, Ms. Kathy Morr and Faculty of the Department of Dental Hygiene, Cost: $300.00, Credit: 43.2 hours, Synopsis: This refresher course is designed to give the hygienist instruction and practice necessary to prepare for the clinical aspect of the North Carolina State Board. Additionally, the hygienist who needs to gain clinical practice prior to re-entry in the job market will find this course a valuable experience. Following a day of skill analysis, participants will deliver clinical care to selected patients. This work will be under the supervision of the Dental Hygiene faculty. The range of clinical services will encompass those permissible by the North Carolina State Dental Laws and will be provided at the University of North Carolina School of Dentistry and/or selected off campus clinics. Each participant will be expected to provide evidence of liability insurance and will be required to provide their own instruments exclusive of a handpiece.

As requested
Oral Diagnosis and Disease Prevention Mini-Residency, Faculty of the Department of Oral Diagnosis, Cost: negotiable, Credit: contracted, Synopsis: This personalized educational experience is flexible, personal, concentrated, and self-directed. The purpose of this program is to meet the need of dental professionals who desire more than a superficial learning experience or who have limited access to other forms of continuing education. This exceptional program is an individualized learning experience developed for you according to your needs. Objectives are contracted to reflect your desire for in-depth and/or wide range study in Oral Diagnosis and Disease Prevention. For more information, please contact Department of Oral Diagnosis, School of Dentistry 209H, The University of North Carolina, Chapel Hill, N.C. 27514, U.S.A. (919) 966-2746.

PLEASE NOTE!

1-800-722-1355 (N.C. ONLY)

TOLL-FREE NUMBER FOR OFFICE OF INSTITUTIONAL AND PROFESSIONAL RELATIONS UNC SCHOOL OF DENTISTRY

Continuing Dental Education

UNC Dental Alumni Association

AHEC

Dental Foundation of N.C., Inc.

UNC Dental Parents

APPLICATION FORM

Please enroll me in the following course(s):

	Course Title		Course Date	Registration Fee	Amount Enclosed
1)	_____	on	_____	_____	_____
2)	_____	on	_____	_____	_____

Name _____ SS# _____ Street _____

City _____ State _____ Zip _____ Office Phone _____ Occupation _____

List any other personnel attending (if in addition to participant above) and give course date:

1) _____ SS# _____ on _____ Fee _____ Occupation _____
2) _____ SS# _____ on _____ Fee _____ Occupation _____
3) _____ SS# _____ on _____ Fee _____ Occupation _____

(Make checks payable to the UNC School of Dentistry and mail to Continuing Dental Education, 410 Brauer Hall 209H, School of Dentistry, Chapel Hill, NC 27514, or call 919/966-2729 for further information.)

AHEC Notes

AHEC Offers Marketing Courses

Many dentists have expressed concern about lack of patients, empty appointment books, reduced income and dentists moving into their area. As a result of this concern, the Area Health Education Centers (AHEC) Program has joined with the North Carolina Dental Society and the Dental Health Section of the Department of Human Resources to present a course which will assist dentists with marketing dentistry and increasing demand for their services, using a community approach. This course is designed to help dentists respond to rising competition, increase the demand for dental treatment, and build and maintain successful practices using an inexpensive and dynamic approach to external marketing. Areas covered in the course include: a success story from a practicing dentist, marketing dentistry in the community, strategies for marketing, increasing the demand for dental care, developing and communicating a marketing message, selecting marketing strategies to match individual practice goals.

The pilot course was held in Greensboro AHEC on November 30, 1984. Additional courses will be offered through the AHEC system. If you are interested in attending this course, please contact the AHEC in your region or the AHEC office at UNC School of Dentistry (1-800-722-1355 or 919/966-2749).

–Darlene Sams

AHEC Calendar

A listing of continuing dental education programs located in the North Carolina AHEC facilities. For further information, contact the AHEC Coordinator at the UNC School of Dentistry, 1-800-722-1355 (North Carolina Only) or (919) 966-2749.

1985

March

1 Dental Phobias, Donna Warren, Jim George, and Jan Holland, Northwest AHEC, Location to be announced

6 Nursing Caries: Diagnosis and Treatment, Dr. Tom McIver, 2:00-4:00 p.m., Fayetteville AHEC, Location to be announced

12 Stress Management, Hillary Broder, UNC School of Dentistry

19 Current Trends in Esthetic Bonding, Dr. Joe Wall, Charlotte AHEC, Isothermal Dental Society, Rutherfordton, NC

27 Update in Hepatitis, AIDS, and Herpes, Dr. Jim Crawford, Fayetteville AHEC, 3:00-9:00 p.m.

29 Dental Sealants, Dr. Dilley, Central Piedmont Community College, Charlotte AHEC

April

3 Health Hazards in the Dental Office, Dr. Jim Crawford, Mountain AHEC, 3:00-9:00 p.m.

10 Evaluating Student Clinical Performance, Dr. Bernie Machen, Fayetteville AHEC, Location to be announced

11 Tooth Colored Restorations, Dr. Troy Sluder, Mountain AHEC, Spruce Pine, NC, 5:30-8:30 p.m.

13 Human Relations in the Dental Office, Linda Stewart, Charlotte AHEC, Location to be announced

16 Dental Sealants, Dr. Bill Vann, Charlotte AHEC, Isothermal Dental Society

19 Maxillofacial Pain Syndrome, Drs. Sharon Turner and Jeff Burkes, Northwest AHEC, 9:00-5:00 p.m., Boone, NC

May

21 Pain Clinic Program at UNC-CH, Dr. Sharon Turner, Wake AHEC, Wake County Dental Society, 6:00-8:15 p.m.

June

18 Current Issues in Dental Assisting, Lynn Saunders, Charlotte AHEC, 7:00-8:00 p.m.

DF Happenings

Dr. Sapp (right) receives the gavel from outgoing President Horton (left).

New Officers and Directors Elected

At the annual meeting of the Board of Directors, December 6, 1984, the Directors elected officers for the year beginning on December 7. Elected were: Dr. Baxter B. Sapp of Durham, President; Dr. Fred Howdy of Washington, President-Elect; Dr. Bob Litton of Shelby, Vice-President; and Drs. Webb McCracken and Ben Barker of the School, Secretary-Treasurer and Assistant Secretary-Treasurer respectively. The retiring president, Dr. Charles Horton of High Point, will serve as Immediate Past President.

New Directors elected at the annual membership meeting on December 7, are Mrs. Ann Babcock of Charlotte, Dr.Keith Bentley of North Wilkesboro, Dr. Thom Buttler of Raleigh, Dr. Dudley (Chan) Chandler of Winston-Salem, Mr. John Cross of Chapel Hill, Dr. Robert Garren of Asheville, Dr. Bill Jarvis of High Point, Dr. Smith Jewell of Wilmington, Dr. Jim Kessaris of Hendersonville, Dr. Steve Mackler of Greensboro, Dr. Bettie McKaig of Raleigh, Mr. Bob Walker of Raleigh, and Dr. Pinkney Young of Greenville.

Members of the Board of Directors serve three-year terms except the ex-officio members who serve one-year terms. Ex officio directors represent the following organizations: The North Carolina Dental Society, The North Carolina Dental Auxiliary, The UNC Dental Alumni Association, The North Carolina Dental Assistants Association, The North Carolina Dental Hygienists Association, and the North Carolina Dental Laboratory.

GRANTED, WE DID MORE— SO WHY AREN'T WE GRANTING MORE?

With a $98,000 increase in gifts over 1983, why is the Dental Foundation not accepting grant applications this year? Because fund balances and current policies won't permit it.

Grant awards as well as operating expenses are paid from annual *unrestricted** contributions and income earned from investments. A 1982 policy stipulates that the Foundation is to function from annual contributions and annual allocations of investment income (after inflation) and that 75% of the Foundation's fund balance would be invested. Prior to that time the Foundation had operated on a policy of spending as much as needed and considering projected receipts when approving grants.

This policy, combined with 1981 grant awards which exceeded annual receipts and earnings and with a continued decline in unrestricted gifts, has resulted in the Foundation having to spend from its investment corpus. Operating fund balances have decreased from 1982 to 1984 by $141,000.

Although annual gifts of $290,000 broke records, some $218,000 of these were designated by the donors for the School of Dentistry and its divisions. Therefore the Board of Directors, in an effort to control the situation, endorse the 1982 policy and decline for the second year to award any grants.

A positive net income position for the Foundation's unrestricted (operating) fund balance would allow consideration of grant applications. To reach that position, unrestricted receipts will have to increase.

As a further explanation of the financial position, a summary of income and expense for the 1983-84 year is shown here.

*as opposed to *restricted* gifts which are donor-designated for specific Dental School programs.

The Foundation is pleased to have attracted recurring support from corporate interests as well as friends of dentistry throughout the country—notably the parents of students at the School of Dentistry.

It is with gratitude and pride that the Foundation recognizes contributors in the HONOR ROLL for the 1984-85 year. These individuals, whose gifts were made between July 1983 and June 1984, are eligible to participate in the 1984 election of the Board of Directors and to stand as nominees to the Board.

Operating Fund (unrestricted gifts)

Income	
Contributions	71,572
Interest	29,561
Other income	6,206
Expense	
Programs	146,001
Fund raising	16,719
Management & General	45,705

Restricted Funds Donor designated for current uses by School of Dentistry

Income	
Contributions	197,151
Interest	25,279
Expense	
Programs	161,937
Management & General	2,424

Donor designated for endowed uses by the School of Dentistry

Income	
Contributions	21,763
Interest	21,817
Expense	12,961

The ongoing function of the DENTAL FOUNDATION OF NORTH CAROLINA, INC. is to develop resources to assist North Carolina's dental profession in the pursuit of excellence in dental education, research, and service.

Annually the Foundation solicits gifts from members of the profession who live and practice in North Carolina as well as alumni of the U.N.C. School of Dentistry who live outside of North Carolina.

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Dr. Stamm

Brauer Hall

After a broad international search for a successor to Dr. Philip Hirsch, the School of Dentistry is pleased to announce the appointment of Dr. John W. Stamm as Professor, Assistant Dean, and Director of the Dental Research Center at the University of North Carolina at Chapel Hill.

Dr. Stamm, a native of Germany, received his D.D.S. degree at the University of Alberta, D.D.P.H. at the University of Toronto, M.Sc.D. in Epidemiology and Biometrics at the University of Toronto.

Dr. Ben D. Barker, Dean, UNC-CH School of Dentistry, states "Research in dentistry is experiencing transition and expansion as is the case with the teaching, patient care, and service missions of the School of Dentistry. Dr. John Stamm joins the University at this critical time in the life of the School as we seek to broaden collaboration and integration of dental research in this institution. He brings special leadership and research administration skills to an expanded agenda for basic, clinical, behavioral, health services, and other research related to oral health and oral health care. He will be working at appropriate levels with the clinical departments and within and external to the University to focus the varied talents of the faculty of dentistry on important new research questions and their solutions. We welcome the Stamms to Chapel Hill and the University community."

Prior to moving to Chapel Hill, Dr. Stamm was Professor and Chairman of Community Dentistry at the McGill University School of Dentistry in Montreal, Canada. He also held an appointment in the Departments of Epidemiology and Health.

His professional activities include serving as Chief Examiner (Dental Public Health) and Examiner-in-Chief for the Royal College of Dentistry. Dr. Stamm has held numerous consultant and committee appointments outside the academic setting. Also he is the author of many publications and has presented a number of continuing education or scientific programs.

ANNOUNCEMENT

Operative Text Revised

We are pleased to announce publication by C. V. Mosby of the 2nd Edition of *The Arts and Science of Operative Dentistry* (600 pp., 2,350 illustrations, $49.95), edited by Drs. C. M. Sturdevant, R. E. Barton, C. L. Sockwell, and W. D. Strickland. To order write The C. V. Mosby Company, 111830 Westline Industrial Drive, St. Louis, Missouri 63146, or telephone 1-800-325-4177. Orders may also be placed by telephoning The Caduceus Book Store located on the UNC-CH Campus, (919) 966-2208. Visa and Mastercard will be accepted for these telephone orders.

TMJ Study Scheduled

The UNC Pain Program will be undertaking a large multi-site study of a computer aided diagnostic instrument for temporomandibular joint (TMJ) disorders. The results of the initial studies are very promising. Dentists who have a special interest in treating TMJ patients are invited to participate in the study. Information about participation in the TMJ study can be obtained by writing Dr. Tom Lundeen, UNC Pain Program, School of Dentistry (209H), University of North Carolina at Chapel Hill, Chapel Hill, North Carolina 27514.

Faculty Updates

Ben D. Barker (1958) (Administration), **Charles L. Milone** (Dental Ecology), and **Ted Roberson** (1968) (Operative Dentistry) were recently inducted into the International College of Dentists at their annual meeting held in San Francisco.

Rodger M. Dalston (Dental Ecology) became a Fellow at the American Speech-Language-Hearing Association at its recent annual meeting. As described in the conferring letter, "Fellowship in ASHA is awarded for outstanding professional/scientific achievement and is one of the highest forms of recognition conferred by this Association."

David A. Felton (1977) (Fixed Prosthodontics) has recently been appointed to Assistant Professor at the UNC-CH School of Dentistry.

Walter T. McFall, Jr, (1958) (Periodontics) was re-elected for a second three-year term on the Executive Council of the American Academy of Periodontology. Dr. McFall was elected to represent AAP members in the southeastern region on this governing body. He recently participated in a two-day conference held at ADA headquarters in Chicago. Dr. McFall is a member of the ADA's Council on Dental Therapeutics Advisory Committee on Treatment of Dentinal Hypersensitivity.

Harald O. Heymann (1979) (Operative Dentistry) recently spoke at the First International Symposium on Laboratory Applications of Light-Cured Composits in Philadelphia, Pennsylvania. Dr. Heymann also presented lecture and slide presentations to the Loblolly Dental Study Club in Kinston and Prima Dental Study Club in Goldsboro. He also presented a continuing education course at the Medical College of South Carolina entitled "Update of Anterior Esthetic Materials and Techniques."

Heraline E. Hicks has been recently appointed as Research Assistant Professor in the Department of Oral Surgery.

Jan Carlton Holland (DATE 1981) (Dental Ecology) presented a poster session paper entitled "Dental Screening in the Schools: A Collaborative Approach" at the American Public Health Association Annual Meeting in Anaheim, California. The theme for the 112th Annual Meeting was entitled "Shaping the Nation's Health Agenda".

Stephen R. Matteson (Oral Diagnosis) has recently been promoted to the rank of Professor. Dr. Matteson also holds a joint appointment at the rank of Adjunct Associate Professor in the Department of Radiology at the UNC-CH School of Medicine, effective through September, 1986.

Edward H. O'Neil (Institutional and Professional Relations) has recently received his Ph.D. in American Studies/Cultural Foundations of Education from Syracuse University. His dissertation title was "Private Schools and Public Vision: Academies in Upstate New York, 1800-1860".

Thomas N. Pezdek (1984) has recently been appointed to a part-time faculty position, Clinical Instructor, in the Department of Fixed Prosthodontics.

Bill C. Terry (Oral Surgery) was recently presented with the 1984 William F. Harrigan Award. This award is presented annually by the William F. Harrigan Bellevue Oral Surgery Association to a recipient who best symbolizes the qualities and integrity of William Harrigan, M.D., D.D.S. who was Chief of Oral Surgery at New York City's Bellevue Hospital and was responsible for training many of the current leaders in the specialty of Oral and Maxillofacial Surgery. During the meeting Dr. Terry also participated as a diagnostician in a clinical pathology conference on Pediatric Pathology and presented a Consultation Clinic on Preprosthetic Surgery.

Phillip L. Savage (1971) of Burlington has been appointed to a part-time position, Clinical Assistant Professor, in the Department of Periodontics.

Aldridge D. Wilder, Jr. (1973) (Operative Dentistry) recently presented a 12-hour continuing education course entitled Restorative Dentistry at the University of Sao Paulo in Sao Paulo, Brazil. Dr. Wilder also recently presented a paper at the International Symposium on posterior composite resins in St. Maarten, Netherlands Antilles.

UNC Dental Parents Update

Tenth Annual Parents Day Scheduled

Paul Morris, President, UNC Dental Parents has recently announced the plans for the Tenth Annual Parents Day on *Friday, April 12, 1985* in Chapel Hill.

For this Parents Day another outstanding schedule of activities is planned. Included are tours of the School of Dentistry and discussions on post graduate plans and stress among dental students. Details are being worked out to also include special programs for parents of auxiliary students and for dental parents who have questions regarding the costs of a dental education.

Mr. Gerry Mundy and friends at Healthco Dental Supply have again generously contributed to the cost of the luncheon.

Brochures will be in the mail in the near future. Make your plans to join in this superb program designed for you, the Dental Parent, to enjoy fellowship and information important to you on the UNC Dental Parents, its projects, and your work with and for the School of Dentistry.

If you have questions, contact the Office of Institutional and Professional Relations, (919) 966-4563 or 1-800-722-1355 (North Carolina only).

Student Updates

David Moore

Moore Wins ADA/Dentsply Table Clinic Award

David H. Moore, Class of 1986, UNC School of Dentistry, recently won second place in the 1984 ADA/ Dentsply Student Clinician Program held in conjunction with the 125th Annual Session of the ADA in Atlanta, Georgia. His table clinic was titled "Current Research on Posterior Composite Restorations".

Fifty-five dental students from nearly every undergraduate dental school in the United States and Puerto Rico participated in the 1984 Program. Competition was divided into two categories: Clinical Application Techniques and Basic Science and Research.

The Program celebrated its twenty-sixth anniversary year in Atlanta and is officially sponsored by the Council on Annual Sessions of the American Dental Association. The Student Clinician Program has been financially supported by Dentsply International since its inception in 1959.

Staff Updates

The School of Dentistry recently honored the following staff members for service to the University.

Sylvia Riley, Department of Oral Surgery, 25 years
Brenda Rogers, Administration, 15 years
Nancy Atwater, Department of Oral Diagnosis, 10 years
Bill White, Learning Resources Center, 10 years
Sherry Montague, Department of Fixed Prosthodontics, 5 years
Cynthia Blake, Department of Orthodontics, 5 years

Jeter Johnson, Dental Laboratory Technician II in the Department of Periodontics, retired from the School of Dentistry effective December 31, 1984. He had been with the School since December 1, 1963.

Alumni Updates

Keith Bentley (1960) of North Wilkesboro has recently fellowship in the Academy of General Dentistry with 500 hours or more of continuing education. Other dentists in North Carolina who also received fellowship are: Harry Baldwin, North Wilkesboro; P. Marvin Brame, North Wilkesboro; **Gavin G. Harrell** (1979), Elkin; **James A. Harrell, Sr.** (Affiliate Life), Elkin; and **Eldon H. Parks** (1963), Elkin.

Hazel J. Brown (1978) has been selected to serve as a member of the N.C. State Medical Agenda Dental Peer Review Committee by the Department of Human Resources. She will represent the 5th District. The committee is responsible for evaluating the care, appropriateness and necessity of care and services provided to Medicaid recipients.

Jack C. Case (1980), **Alan W. Irvin** (1982), and **Gary S. Jacobs** (1979) were recently inducted into active membership of the American Association of Orthodontists at the 63rd Annual Meeting of the Southern Society of Orthodontists. More than 9,000 orthodontists from the United States, Canada, and abroad are members of the AAO. Major purposes of the AAO include promotion of a high level of professionalism among orthodontists, sponsorship of ongoing research and education in the specialty, and public education about the need and benefits of orthodontic treatment.

Tom Jackson (1975), inventor of magnet attachments and in-office acid etch machine for Maryland bridges, is a member of the Blue Ridge Dental Society. The success of both inventions has been amazing. He holds patents on both.

Steve Levy (1982) has recently completed his Master of Public Health (Dental Public Health Tract) in the Department of Health Policy and Administration at the UNC School of Public Health. He has been in a Residency Program in Dental Public Health with the N.C. Dental Health Section from January 1984-December 1984. He has recently assumed his new responsibilities as Assistant Professor in the Department of Preventive and Community Dentistry at the University of Iowa. His new address is 1406 Eastview Drive, Coralville, Iowa 52241.

Michael Mayhew (1979) recently completed the requirements leading to certification by the American Board of Pediatric Dentistry. Of the 32 pediatric dentists in private practice in NC, Mayhew is only the third to achieve the honor as diplomate. Mayhew has recently returned to UNC-CH to further his education in Orthodontics. Upon graduation he plans to return to Boone to practice both pediatric dentistry and orthodontics.

Daniel A. Shugars (Administration) has recently received a $5,386 grant to study musculoskeletal pain among dentists. This grant is being funded by the Academy of General Dentistry Foundation. Results will be published in *General Dentistry* probably in late 1985.

Lynn Hamrick Saunders (1982-D.A.T.E.) is currently Treasurer of the North Carolina Dental Assistants Association and President of Durham-Orange Dental Assistants Society.

Nevim Vandermeer (1971) of Clayton was recently President of the Johnston County Dental Society. **Harold Lancaster** (1982) of Princeton was elected Secretary.

Alan Weinstein (1970) recently presented two programs for the Indiana Section of the American Association for Dental Research at Indiana University School of Dentistry. These sessions were titled "Creative Visual Presentations" and "Conservative Alternatives in Restorative Dentistry". He also presented three one-half day programs on "Conservation Esthetics" and "Preventive Restorative Dentistry" at the Chicago Midwinter Meeting. Dr. Weinstein was recently appointed to the editorial board of the *Journal of the Ohio Dental Association*.

20th Dental Alumni Day Plans Announced

The UNC School of Dentistry and the Dental Alumni Association have recently announced plans for the 20th Dental Alumni Day which is scheduled Saturday, April 13, 1985 in Chapel Hill.

The program begins at 8:00 a.m. with the display of student table clinics. Clinical sessions begin at 9:00 a.m. and will feature Dr. Alan Weinstein, Class of 1970, who practices general dentistry in Cincinnati, Ohio. Dr. Weinstein has presented numerous continuing education programs on a national level including those during the Hinman Dental Meeting and the Chicago Midwinter Meeting. He will discuss non orthodontic corrections through bonding in a program titled "Can't Band It? . . . Then Bond It."

Also featured on the program is David Raney, Director of Learning Resources and Instructional Development at the UNC-CH School of Dentistry. He will discuss visual communication principles useful when presenting dental information to public audiences in a program titled "Going Public". Dentists and auxiliaries should find this information useful in their interaction with patients and with other persons outside the profession.

Betty White, an accountant with Blackman and Sloop in Chapel Hill, will discuss '85 tax tips for the professional. She will include pointers on planned giving.

After the Annual Business Session and the election of officers, a school-wide luncheon will be held at Storybook Farm. Maps and/or transportation will be available. This will be the perfect family activity and will provide alumni time to visit with faculty, staff, and students in an informal setting.

Later in the day, a reception will be held for all visiting alumni and friends at the Carolina Inn. Reunion Classes of '55, '60, '65, '70, '75, and '80 will be honored. Come dressed as you are after the picnic!

At the end of this exciting program, you can enjoy dinner on your own or you may elect to return home.

Class reunions will be scheduled on Friday, April 12 or Saturday, April 13. Mark these dates on your calendar now.

Special Hinman Reception Scheduled

Mark your calendars now and plan to attend the UNC-CH School of Dentistry's special reception held in conjunction with the Thomas P. Hinman Dental Meeting in Atlanta, Georgia.

This activity is scheduled on Saturday, March 23, 1985, 6:00 p.m. - 7:30 p.m. in the Tara Room at the Atlanta Marriott Hotel.

Alumni and Friends are encouraged to come by and visit with School representatives. This activity is sponsored by the UNC Dental Alumni Association.

D.A.T.E Update

The D.A.T.E. Alumni Association is presently underway. Each alumnus should have received a letter this Fall explaining the Association's objectives and goals. If anyone did not receive a letter or would like more information about the Association, please contact Rebecca Scruggs, D.A.T.E. Program, UNC School of Dentistry (209H), Chapel Hill, North Carolina 27514.

Several of the D.A.T.E. Master students are involved in interesting research. Bonnie Tolson's project is entitled "A Comparison of Kodak Eftaspeed and Ultraspeed Film for Detection of Simulated Recurrent Decay in Amalgam Restorations". Melissa Roe's research concerns "Facial and Dental Characteristics of Dental Deformity Patients". Joan Laylon is surveying dental hygiene programs to assess periodontal curricula. Phyllis Holland is conducting a comparison of composite finishing techniques on stain update; and Debbie Supak is surveying dental specialists to determine the need for specialty trained dental assistants.

Priscilla Levine is conducting an extensive nutritional assessment of juvenile diabetic patients.

Two students are interning this semester. Sandy Strickland is at Asheville-Buncombe Technical College. Ginny Kimbrell is at Wayne Community College in Goldsboro.

Sharon Logue (Class 1975) recently attended a course on the care of the disabled in Seattle, Washington. Sharon remarked that she has started applying some new techniques with the handicapped on student rotations at University of Texas at San Antonio. Colleen Reiter (Class 1982) has started a business, Professional Staff Solutions, Inc., in Oklahoma City, Oklahoma. The business is designed to termporarily and permanently place dental office personnel.

Dental Alumni Day is scheduled Saturday, April 13, 1985 at the UNC School of Dentistry in Chapel Hill. Mark your calendar and make plans to attend.

Rebecca Scruggs

Dental Hygiene Update

Fall Semester was very productive for the Dental Hygiene Program. All faculty have become involved in research promising to improve the health of patients. Donna Warren is involved in a project involving diabetes mellitus and dental health; Sally Mauriello is studying salivary effects on taste perception with geriatric populations.

Jan Holland presented a poster on dental screenings, referrals and follow-ups at the American Public Health Association meeting in Anaheim, California. She also presented a program, "Prevention Update", on Dental Seminar Day with Donna Warren.

Several continuing education offerings are in the planning. Please contact the Office, 919/966-2800, if you are interested in specific areas. Also, please respond to Kathie Morr's request for names of prospective students if you haven't done so already. Thanks to the many alumni who have responded. The Program looks to you for support, and your efforts are appreciated.

Donna Warren

Dental Hygiene Alumni Association Update

The Board of Directors of the Dental Hygiene Alumni Association met in October to plan the year's activities. Goals for the year include recruitment for the Dental Hygiene Program, fund raising for the Alberta Beat Dolan Scholarship, and recruitment for membership to the Association. Plans for Alumni Day, April 13, 1985, are in the making. Honored on that day will be the 1985 Distinguished Alumnus, Donna Warren. Please mark your calendars and plan to attend.

Dues for 1985 are payable at this time. Please also consider a tax deductible donation to the ABD Scholarship. (Dues are also tax deductible.)

Name: _____

Address: _____

_____

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____ Enclosed are my 1985 dues $15.00

____ Enclosed is my donation to ABD Scholarship

_____ Is my nominee for the 1986 Distinguished Alumnus Award

Make checks payable to the UNC-DH Alumni Association and mail to: Donna Warren, 405 Brauer Hall 211H, UNC School of Dentistry, Chapel Hill, N.C. 27514

Dental Assisting Update

The Dental Assisting students faced many new challenges in their clinical experience as part of the dental team during the 1984 Fall Semester. Upon completion of Mrs. Saunders' intensive preclinical instruction course, students looked forward to the application of their skills in the clinical setting. Rotations throughout the clinics in the UNC School of Dentistry were begun in October. Spring semester will provide a wider range of clinical experience as students assist in the specialty clinics for two week rotations.

The 1984-85 class officers were recently elected. Those elected are: Bekki Riggsbee, President; Jan Vipperman, Vice-President; Elizabeth Holt, Secretary-Treasurer; and Brooke Bundy, Spurgeon Representative. The class organized and sponsored a successful fund raising project in October to provide funding for their ADAA professional pins.

The Durham-Orange Dental Assistants Society (DODAS) provided their annual November reception for the 1984-85 students at the Downtowner Motor Inn in Durham. A large representation of 1983 and 1984 alumni were present to welcome the new students to their professional association. DODAS provides this function each year for the UNC Dental Assisting students to promote ADAA membership which is an effort greatly appreciated by the UNC Dental Assisting faculty and students.

In honor of the recent National Dental Assistants' Appreciation Week, a reception for the Dental Assisting students was held. Guest speakers were Ms. Jacqulyn Osborne, Assistant Director for Admissions at the School and Ms. Susen Martin (1974) Immediate Past President of DODAS.

Three UNC Dental Assisting faculty members attended the recent national meeting of the ADAA in Chicago. Those attending were Faye Watkins, NCDAA President; Lynn Hamrick Saunders, NCDAA Treasurer and DODAS President; and Ethel Earl. All three served as District IV delegates and attended legislative and continuing education activities. Ethel Earl served as a panel representative for a hepatitis workshop and also presented an update on radiography legislation.

Students completing the one semester Dental Assisting Specialty Program in December included Valerie Young, Jamestown, NC (Orthodontics); Margaret Knight, Jamestown, NC (Orthodontics); Lisa Stack, Oak Ridge, NC (Orthodontics); Rona Smithey, Greensboro, NC (Oral Surgery); Jane Boles, Elkin, NC (Periodontics); and Wendy Moton, Eden, NC (Periodontics). This program provides advanced training for the Certified Dental Assistant in specific specialty areas.

Plans for the Third Annual Dental Assisting Alumni Day scheduled April 13 are underway. Continuing education activities are on the agenda along with the fellowship and camaraderie always shared by UNC Alumni. Additional information will be made available within the next month. As always, please notify the Alumni Office of name and address changes to enable your Alumni Association to continue correspondence.

Pam Klute

Dent Notes

"Want a special gift to send someone for a referral? How about a personalized toothbrush! Buy a good toothbrush with a smooth plain handle. Purchase the desired colors of acrylic paint in the new tube form, which applies like a magic marker (Deco Color–Uchida of America Corporation). Write the patient's name in block letters on the handle, then add a small ball to every available end of each letter to make it fancy. You may also add any number of simple designs using as many colors as possible. When dry, cover the head and lightly spray the handle with clear acrylic spray paint to prevent the lettering from rubbing off. It's better to write on the side away and down from the bristles, and easier if you limit the writing to one side. The result is a colorful, personalized gift that reminds them you care. The only dental problem is that usually patients think it's too pretty to brush with, and use it as a decoration in their guest bathroom."

"Want to help your TMJ patients twice as much in the same amount of time? Next time you are performing an equilibration, also let them listen to one of the new compact stereo cassette tape players, and use a self-improvement tape series that helps them learn ways to cope with stress and to change their attitude to a more positive one (my favorite is "Who do you think you are" by Dave Grant, Semantodontics Inc., Phoenix, Arizona). If they listen in order to change that which *they* can change, while at the same time your are equilibration in order to change that which *you* can change, they combined effect will be very rewarding, with no extra time involvement for you."

–Van Haywood, Assistant Professor,
Department of Fixed Prosthodontics

Constituent Update

American Cancer Society N.C. Division

REHABILITATION OF THE CANCER PATIENT

sponsored by

The Orange County Unit of the
American Cancer Society
North Carolina Division
in conjunction with the
School of Medicine, School of
Dentistry, and North Carolina
Memorial Hospital
at the
University of North Carolina
at Chapel Hill

SATURDAY, APRIL 27, 1985
8:00 a.m. - 4:00 p.m.

Berryhill Hall, NCMH Medical
Complex, UNC-CH Campus
Chapel Hill, North Carolina

Program to include such topics as:

1. Rehabilitation of the head and neck cancer patient
2. Psychological issues in cancer rehabilitation
3. Nutritional issues in cancer
4. Insurability of the treated cancer patient
5. Management of pain in patients with cancer
6. Physical therapy in cancer rehabilitation

For registration information, contact:
Dr. Glenn Minsley
UNC-CH School of Dentistry
(919) 966-2754

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(800) 542-9630 (VA)
(800) 368-3504 (WV)

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(615) 894-1742
(800) 521-6913 (TN)

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(800) 352-0294 (TN)
(800) 251-0314 (VA)

6140 Clinton Highway
Knoxville TN 37912
(615) 688-1785
(800) 362-9584 (TN)
(800) 251-9628
(KY, NC, VA)

Calendar of Events

This calendar is updated prior to each publication. Activities are scheduled in Chapel Hill, unless otherwise noted. For further continuing dental education courses, please refer to the CONTINUING DENTAL EDUCATION section. You are invited to notify our office of further activities in your area as well as checking our master calendar of events scheduled for dentistry.

March 1985

9 — 1st District Midwinter Meeting
Inn on the Plaza, Asheville

17-19 — AADS Meeting, Las Vegas

20-22 — IADR, AADR Meetings, Las Vegas

23-27 — Hinman Dental Meeting
Atlanta, Georgia

23 — UNC School of Dentistry Reception
6:00 pm
Tara Room, Atlanta Marriott

April 1985

12 — Parents Day

13 — Alumni Day
Class reunions to be scheduled April 12 or 13: '55, '60, '65, '70, '75, and '80.
DH, DA, and D.A.T.E. alumni to meet also.
UNC School of Dentistry Spring Picnic

19-20 — NCDS House of Delegates Meeting, Velvet Cloak Inn, Raleigh

May 1985

12 — School of Dentistry Commencement
Memorial Hall, UNC-CH Campus, 1:00 p.m.

30-June 2 — NCDS Annual Meeting, Pinehurst

July 1985

27-31 — AGD Annual Meeting, Detroit, Michigan

September 1985

7 — UNC at Navy

13-15 — 4th District NCDS Meeting, TBA
5th District NCDS Meeting, Myrtle Beach Hilton

14 — UNC-Army (home)

20-22 — 2nd District NCDS Meeting, Charlotte Marriott

27-29 — 1st District NCDS Meeting, TBA

28 — UNC-University of Michigan (home)

October 1985

5 — UNC at GA Tech

12 — UNC-Wake Forest (home)
Fall Football Day

19 — UNC at NCSU

25-27 — 3rd District NCDS Meeting
Grove Park Inn, Asheville

26 — UNC-FL State (home)

November 1985

2 — UNC at MD

2-5 — ADA Annual Meeting, San Francisco, CA

9 — UNC-Clemson (home)

16 — UNC at Virginia

23 — UNC-Duke

December 1985

6 — Dental Seminar Day

THE NORTH CAROLINA DENTAL
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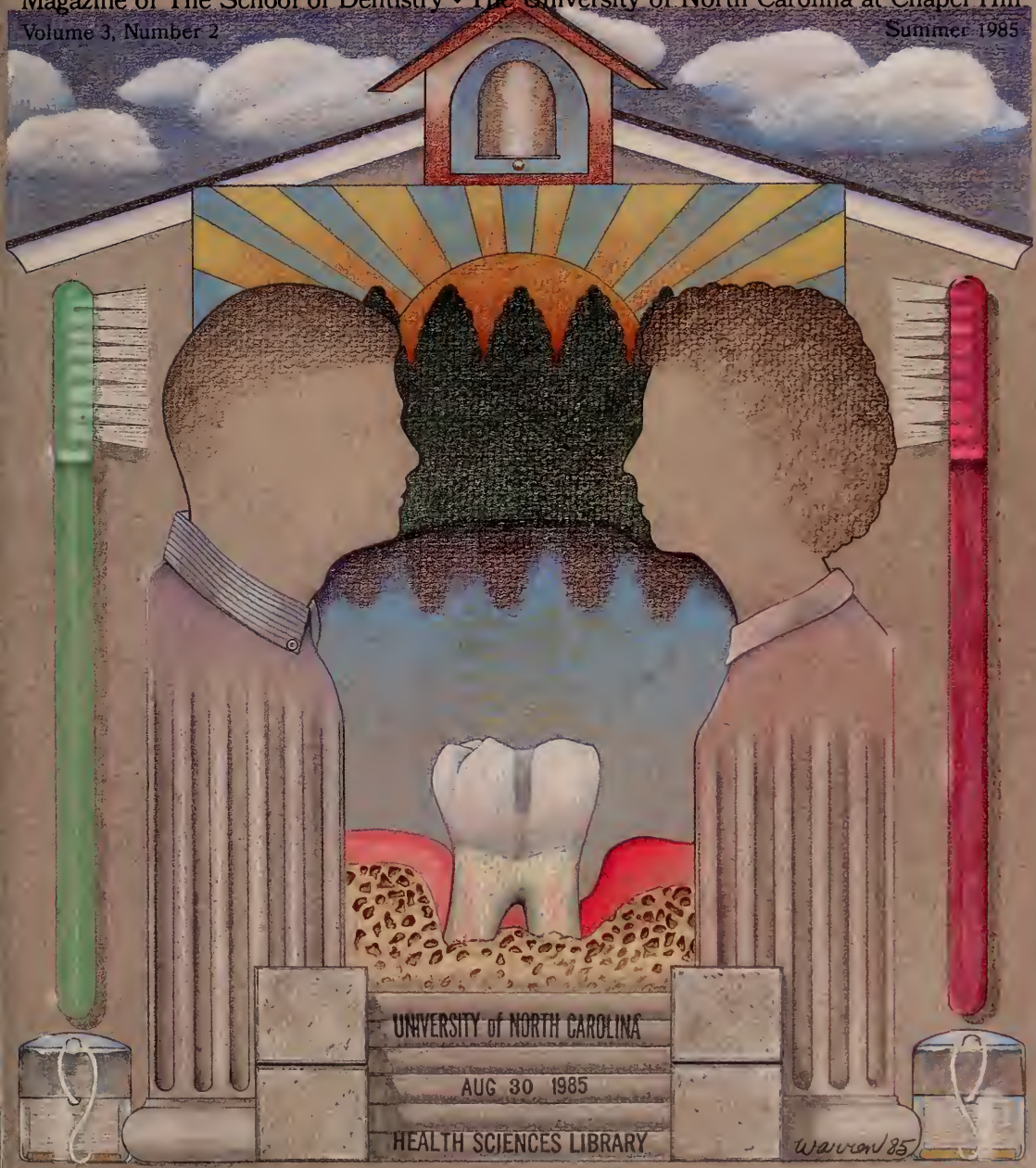
THE NORTH CAROLINA DENTAL R·E·V·I·E·W

Magazine of The School of Dentistry • The University of North Carolina at Chapel Hill
Volume 3, Number 2 Summer 1985



THE NORTH CAROLINA DENTAL R·E·V·I·E·W

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Ben D. Barker, D.D.S., *Dean*
Edward H. O'Neil, Ph.D., *Publisher*
Priscilla M. Allen, *Editor*
R. Gary Rozier, D.D.S., M.P.H. *Issue Editor*
Warren McCollum, *Art Director*
O. Tom Edwards, *Photographer*
Jay Gladwell, *Photographer*

Cover: The cover illustration symbolizes the articles in this issue as they deal with problems of periodontal disease.

Cover Illustration by Warren McCollum

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Editor's Note:

Dr. Forest Iron's most recent appointment was not with the UNC School of Dentistry but with Dental Support Associates, Inc.

THE NORTH CAROLINA DENTAL
R · E · V · I · E · W
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Volume 3, Number 2 Summer 1985

Dr. Barker

Dean's Commentary

Editor's Note: The following statements were taken from remarks presented by Dean Barker to the Deans and other representatives of sixty dental schools at a special meeting informing them of The PEW National Dental Education Program. The project is an $8.7 million undertaking to assist U.S. dental education in a transition period. The UNC School of Dentistry has been designated to manage this five-year program by The Pew Memorial Trust of Philadelphia. For additional information regarding this special program, refer to the Dental Foundation of N.C. highlights.

PROGRAM OVERVIEW
THE PEW NATIONAL DENTAL EDUCATION PROGRAM
ORIENTATION SESSION
Chicago, Illinois
May 23, 1985

Dr. Ben D. Barker, Co-Project Director

For some time now, many people have become increasingly concerned about the deteriorating circumstance of dental education. These concerns have also found frequent expression on the editorial and op-ed pages of the New York Times, Washington Post, Wall Street Journal, and our local papers as well.

The schools of dentistry in the United States constitute a national resource. Whatever their present state of health, whatever their current environment with all their strengths and weaknesses, they should continue to be viewed in that light. Dental education faces an uncertain future and is in serious trouble. For that reason there is a pressing need for these institutions to examine themselves with the view to adapting to a changing social, economic and educational reality and a vastly different future.

Dental education in the United States has been in an expansion mode since the mid 1960's. This expansion has been almost singular in purpose. More schools, more buildings and space, and more faculty in order to have more students, and thereby produce more general practitioners and more specialists. The result is that in many places in North America the supply of practitioners outstrips the effective demand for dental care. There is then, not only a perception, but the possibility of a real oversupply. How long this circumstance will prevail is uncertain at best. The unfortunate aspect of this great expansion in dental manpower resources is that most of these individuals were trained to restore the dentition – and very little else.

Dental practitioners have little capacity for adaptation and change, in part because of the technical nature of their training and partly because of the failure of dental education to develop in them critical, scientific outlooks about health, disease and oral health care.

The burgeoning number of practitioners coupled with a decreasing demand for dental education, changes in disease patterns, and funding trends in higher education has resulted in an overwhelming set of dislocations within the dental education community. There has been a downturn in first year enrollment since 1978 equivalent to closing thirteen dental schools with a class size of 100 each. This represents a part of the financial dislocation. The other is created by a downturn in general fiscal support for all education including dental education. There has been a downturn in dental caries, which is to the public benefit, but further aggravates the need for practitioner change as well as placing new pressures on training programs in the schools.

And finally there has been a downturn in popular support for dental education: first among many practitioners of dentistry. Suddenly practitioners no longer view their alma mater as a partner in professional growth but rather as the enemy producing competition in a world which he or she now believes to be already overcrowded. Secondly, and perhaps more serious, is the way university administrators and leaders have begun to view their dental school operations. When the corridor talk among university presidents and vice-presidents for health is 'what are you going to do with your dental school?' we have a problem. Our schools can no longer justify their existence on the basis of producing manpower. Universities need and want their medical schools for a variety of purposes, but they do not necessarily need, and some may no longer want their dental schools.

Yet, sixty schools remain; sixty deans and sixty faculties, sixty student bodies and a host of programs consuming the available resources in these institutions. These programs may or may not be needed in their present configuration or indeed needed at all. One way of stating this dilemma is to acknowledge that our schools are out of step with their environments. The "business" they are in needs modification consistent with a redefinition of what business we ought to be in. There are other pressing matters: the revolution in health care financing, the making of health care policy in the corporate board rooms of America, and the changing marketplace in which we compete – to list but a few other compelling considerations.

continued on page 5

PERIODONTAL DISEASE IN AMERICA II: *A New Opportunity for Tar Heel Leadership*

Jefferson F. Hardin, D.D.S., M.S.*,
Chairman, Subcommittee on Periodontics 1981-1985,
American Association of Public Health Dentistry

**Associate Professor, Department of Periodontics, School of Dentistry, Medical College of Georgia, Augusta, Georgia.*

INTRODUCTION: A VIEW OF THE PERIODONTAL SWAMP

"The North Carolina study found that, while the prevalence of dental caries in the state is being significantly and steadily reduced, periodontal disease has become a major public health problem. It is a condition that thrives on low public awareness coupled with inadequate professional attention. The Subcommittee on Periodontics of the American Association of Public Health Dentistry has recommended that the North Carolina Dental Manpower Study can be explored as the basis of state and national demonstration projects dedicated to the periodontal awareness and prevention." (Defriese and Barker, 1982)

Russell G. Mawby
President
W. K. Kellogg Foundation
Battle Creek, Michigan
1982

Periodontal disease in America has been described variously as an epidemic, the primary threat to oral health, and a national tragedy. The dramatic contrast between the widespread prevalence of periodontal disease and the phenomenon of periodontal avoidance by both general dentists and public health dentistry represents the most intriguing paradox in the sociology of the profession.

In 1983, a position paper, "Periodontal Disease in America: A Personal and National Tragedy", referred to above by Mawby, attempted to analyze that Great Dental Paradox and delineate certain directions for periodontal disease containment. (Hardin et al., Spring 1983; Bader and Kaplan, March 1983) Throughout its task, the AAPHD Subcommittee was influenced and stimulated by reports of the widely-recognized North Carolina Dental Manpower Projects. (Bawden and DeFriese, 1981; Bawden et al., Winter 1981; Rozier, McFall, and Bowden, Spring 1983; Bawden, September 1981)

In fairness to the profession, a case might be made in defense of our well-documented "periodontal abdication" because of past necessity to deal with caries as the greatest threat to oral health. As the old saying goes, "When you're up to your collective backsides in the alligators of tooth decay, you just can't get out too enthusiastic about draining the periodontal swamp!" Some remaining alligators notwithstanding, there are indications that it's now time to turn our attention to the Swamp.

THE NEW PERIODONTAL PERSPECTIVES

Currently, a sharply increased focus on the periodontal disease problem is evident in the dental professional literature; the general press and communications media; and in workshops and symposia concerned with dental education, research, and public health. State dental associations in Georgia, Tennessee, and Minnesota have established special committees on periodontal awareness.

The impetus for the new periodontal emphasis has arisen principally from three sources. First, there is an increasing body of valid scientific data to show that dental caries prevalence is declining. (Brunelle and Carlos, November 1982) The prevention and treatment of caries and its sequallae represent the bedrock historical foundation of the profession. A significant diminution of caries, therefore, while beneficial to the population, can have potentially serious, if not cataclysmic consequences for dentistry. Clearly, these developments have implications for every aspect of the dental profession: general and specialty practice, education, research, and public health. (Scavotto, November 1982; Bohannan, November 1982)

The second new perspective on periodontal disease has evolved from a virtually universal concern for dentists' lack of "busyness"—either real or perceived. The under-utilization of professional dental resources has been attributed to recurrent periods of economic decline, overproduction of graduate dentists, and a frustrating network of well-known, well-entrenched barrier systems which prevent half of the population from seeking regular dental care. Of course, the accumulating information on declining caries, already discussed, is also a major contributor to the dilemma: we're running out of alligators and the market for their hides is getting softer.

The dental profession has become increasingly preoccupied with the obvious economic impact of these "busyness" deficiencies. Marketing terminology, in fact, has become assimilated rapidly into the lexicon and everyday language of dentistry. Courses in practice management emphasizing "internal" and "external" marketing strategies have proliferated, along with computer sales, alternative dental care delivery systems, and advertising.

Finally, the third perspective on periodontal disease resulted from the intersection of the first two: the caries decline phenomenon and busyness prob-

lems. Periodontal disease management at last was viewed by dental marketing experts, dental public health agencies, and by dental practitioners, their organizations and leadership, as a marketable concept. Long neglected in general practice, (Bader and Kaplan, March 1983) it appeared that healthy exploitation of the "hidden disease" would reveal a "hidden practice" based on increased recognition and management for society's widespread periodontal afflictions. Attempting to drain the swamp wasn't a bad idea and it could even provide employment for the work force long after the alligator menace was whipped!

THE MARKETING OF PERIODONTAL DISEASE

Thus, with seemingly exquisite timeliness and serendipity, pyorrhea has become fashionable. This revitalized periodontal awareness was reflected eventually in the proposed prime-time TV education project of the American Dental Association. (Emphasis: Decision 84, May 1984) The 30-second and 60-second commercial type messages targeted periodontal disease awareness exclusively. That theme was selected on the basis of favorable consumer test-audience responses. Despite an intense, year-long promotional effort, however, the program was defeated in the 1984 ADA House of Delegates. (Elliott, December 1984)

Obviously, the issue was highly controversial, touching on a complex array of areas sensitive to the profession: membership losses; the ethics of institutional advertising; image concerns; and bottom-line cost itself cost-effectiveness; and the nature of dental leadership. In the final analysis, almost any issue carrying such an abundance of political "baggage" would have had difficulty in securing the two-thirds majority vote necessary for passage. A particularly disturbing irony is the suggestions, at least, that the ADA's periodontal theme itself may have contributed to the program's rejection. If valid, such a happenstance would reveal a serious disparity between consumer dental health expectations and the profession's willingness to meet them.

Despite the parliamentary rejection, however, it is possible to view a well-planned, saturation-level, prime-time educational project as an important public health promotional concept. Lacking a classical, precisely-targeted vaccine or chemotherapeutic prevention agent, intensive public promotion is an especially attractive and legitimate approach (Rozier, McFall, and Bowden, Spring 1983; Bakdash, McMillan, and Lange, Nov.-Dec. 1984) in the effort to contain periodontal disease. Furthermore, in spite of damaging equivocation by some elements of dental leadership on the "ethics" of the ADA educational proposal (Elliott, December 1984), it was, in fact, a highly responsible effort to spotlight a dental problem too-long neglected. When judged according to *periodontal* parameters, the stewardship of the dental profession for the oral health of the American people may be seriously flawed. Ethicist Lawrence McCullough of Georgetown University regards such deficiencies to be of macro-ethical proportions. (McCullough, 1984) Evidence of other micro-ethical breaches can be found in the increasing legal caseload of negligence actions, brought against individual dentists for periodontal non-recognition and non-management.

The equally important *marketing* value of television was reasonably projected by ADA researchers to increase by one percent, or by about 26, the number of patients seeking care annually in the average general dental practice. Similarly, a mid-1984 report by the American Association of Oral and Maxillofacial Surgeons showed that its three-year institutional advertising program in selected national magazines returned patient fees to AAOMS members at least three times greater than their $3.3 million investment, generated from a special $275/year dues assessment. (Joy, Hardin, and Smith, October 1984)

The California Dental Association reported positive results from its television marketing program, in terms of patient volume – increased by 39 patient visits for 1984 compared to 1983 – and improved public awareness of the message. The CDA television messages did not feature periodontal disease specifically. (*GDAction*, October 1984)

For those state dental organizations anxious to proceed independently with a similar program, the ADA has offered assistance in using the television spot messages prepared for its own defeated national campaign.

North Carolina's Periodontal Challenge

In North Carolina, the dental profession has a unique opportunity to undertake a statewide television educational campaign. To many observers, the productive cooperation between all of the organizations in the state concerned with the North Carolina Dental Manpower Project was a remarkable achievement in itself.

Included in this formidable North Carolina dental professional "milieu" described by DeFriese and Barker are:

- The North Carolina Dental Society
- The North Carolina State Board of Dental Examiners
- The Dental Foundation of North Carolina
- The University of North Carolina at Chapel Hill
  - School of Dentistry
  - School of Public Health
  - Health Services Research Center
- The Dental Health Section, North Carolina Development of Human Resources
- The Research Triangle Institute.

Collectively, these resources, with their experience and previous record of accomplishment should allow the state to move confidently toward establishing a model periodontal program.

The North Carolina study itself noted that "clearly the existing need in the population for periodontal care is not being translated into demand." This observation resulted in the following recommendation in the Agenda for Dental Health Care in North Carolina. (Bawden and DeFriese, 1981)

"*RECOMMENDATION NO. 9:* THE NORTH CAROLINA DENTAL PROFESSION NEEDS TO UNDERTAKE AN AGGRESSIVE EFFORT TO BRING THE PROBLEM OF PERIODONTAL DISEASE UNDER MORE EFFECTIVE CONTROL. PREVENTION OF THE DISEASE SHOULD HAVE THE HIGHEST PRIORITY. THE MAJOR EFFORT SHOULD BE DIRECTED TOWARDS A BROAD PUBLIC EDUCATION PROGRAM FOR CITIZENS OF THE STATE."

The North Carolina research determined that an effective program to reduce the prevalence and consequences of periodontal disease must include efforts to improve the general dentists' response to periodontal problems, as

well as health promotional and educational initiatives directed to the public. (Rozier, McFall, and Bowden, Spring 1983) Significant continuing education programs for dentists and hygienists have been conducted throughout the state. There is encouraging evidence that such programs are effective in increasing the amount of periodontal activity of these practitioners. (McGowan, January 1985) It is time to consider corresponding efforts to reach the public. Thus, North Carolina dental leadership, because of its special experience in assessing the health needs of its citizens, may have arrived at the critical decision-making point regarding a massive television promotional effort.

In addition to the well-known but difficult technique of dental society self-funding, North Carolina dental leaders should explore special grants and other planning assistance from the American Dental Association, the Centers for Disease Control, and other state, federal, and private agencies. A pilot program in North Carolina, using the already-developed ADA material, would provide valuable data to that organization, as well as other states, on implementation, effectiveness and actual TV-stimulated consumer demand for dental services.

Ultimately, there may be renewed attempts to put the defeated ADA educational programs on the national TV networks. Should proposals by the federal government to tax employee health insurance plans and to reduce its budgetary deficit materials, aggressive marketing techniques may be seen again as necessary to offset the possible negative impact on the demand for dental services.

Economic considerations aside, the compelling moral necessity to confront the periodontal problem is unmistakable. For North Carolina, community periodontal demonstration projects are a logical extension of its substantial preliminary efforts. The necessary public health and private health partnerships have already been established. Your leadership is worthy. In North Carolina it's time to drain the periodontal swamp.

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Dean's Commentary

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The need for change in our dental schools is obvious. It will be traumatic, even painful, and only partially successful. However dental education must proceed in that direction or be faced with an externally controlled dismantling of the dental education enterprise. There is the need to identify a new mission for many of these institutions. Should some do more research? Should some concentrate on research training and the production of specialists? Should some maintain a balance of programs? Should some relate to the community in different ways? How can schools enhance their strength in order to occupy and hold a new position in their community or region? And the questions go on.

To accomplish change there is a need to implement a dynamic and comprehensive planning process, a process which leads to the establishment of institutional priorities which are understood by all, and addressed through the assignment of resources to the accomplishment of these priorities. This does not come about easily and it would be folly to expect everyone to join in. In fact, some institutions are already well into the process and attaining reasonable results. Furthermore, there is nothing new about these proposals. Humankind and its institutions have engaged in planning to a greater or lesser extent since our earliest recorded history. What is important and potentially refreshing is that dental education has reached a point where there is common agreement in the profession and within many of these institutions that 'something must be done about our future'.

The remedy is clearly a renewal from within our schools. We already know we face a decade as financially constricted as any since the 1930's. Yet we also know that the nation needs our teaching and research more than ever. The trick is to cut back and move forward at the same time. John Stewart Mill may have put it best: "Great economic and social forces flow like a tide over a half-conscious people. The wise are those who perceive the coming event and seek to shape their institutions and mold the thinking of the people in accordance with the most constructive change. The unwise are those who add nothing constructive to the process, either because of ignorance on the one hand or ignorant opposition on the other."

Fortunately, the officers and trustees of The Pew Memorial Trust believed this program had merit and, they have made a major commitment to dental education. Our hope is that all of you will choose to become a part of this effort and remain directly or indirectly involved throughout the next five years. By doing so, you will add to the richness of the experience, help strengthen a national resource and help us demonstrate to one of the nation's largest Foundations the continuing worth of investments in dentistry. Personally, I have no ambition for the program except that we might in 1990 say – no set of schools in the American university is better prepared for the next five years than our schools of dentistry.

Current Concepts of the Etiology and Pathogenesis of Periodontal Diseases

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The past decade has been an extremely active period in investigation of the etiology and pathogenesis of periodontal disease. Much of the research has concentrated on identifying specific microorganisms and microbial pathogenic mechanisms associated with the various periodontal diseases. Also, host response mechanisms, including inflammation, immune responses, and mechanisms of tissue destruction have been investigated. During the same time, clinical research has flourished as investigators have begun to take a fresh look at many traditional therapeutic methods in light of the new scientific information. Both have led to recent changes in the concepts of periodontal disease processes and therapy.

The purpose of this review is to provide a broad update of the current status of knowledge in periodontal microbial etiology, host response and pathogenesis, and, to a limited extent, diagnosis of periodontal disease.

MICROBIAL ETIOLOGY

Bacteria are the essential, primary etiologic agents for all forms of periodontal disease. (Socransky, 1977; Socransky, Tanner, Haffajee et al., 1982; Page and Schoreder, 1982; Moore, Raney, and Holdeman, 1982; Slots, 1976; van Palenstein Helderman, 1981) This concept evolved in the past twenty years as refinements in sampling and culture techniques enabled researchers to progress beyond the systemic or "constitutional" factors that dominated research efforts from the 1930's until the mid-'60's. (Socransky, Tanner, Haffajee, et al., 1982)

Evidence for the role of bacteria in periodontal disease etiology comes from a variety of studies. (Socransky, 1970) Numerous epidemiologic surveys of human populations around the world and longitudinal studies of developing periodontal disease in animals and man have demonstrated a strong positive correlation between dental deposits of plaque and calculus and the severity of periodontal disease. Longitudinal studies of periodontal therapy in humans, with or without chemotherapeutic agents, have shown that when bacteria are controlled or regularly removed from tooth surfaces, periodontal disease does not progress. Finally, studies in germ-free animals have shown that periodontal destruction can be initiated by oral inoculation of specific organisms isolated from the oral cavities of humans.

Many of the bacteria associated with various forms of periodontal disease have been identified. These organisms have been sampled from periodontal pockets, isolated and grown in cultures, and subsequently identified by standard taxonomic tests. However, it must be emphasized that identification of the predominant organisms in periodontal pockets does not establish a causative role for those organisms in a particular form of disease. For most forms of periodontal disease it has not yet been possible to pinpoint specific pathogens.

Table 1 lists the predominant bacteria which have been identified in association with healthy gingiva and with various periodontal diseases. Tooth surfaces adjacent to healthy, non-inflamed gingiva are colonized by small numbers of streptococci and *Actinomyces* organisms. These are gram-positive, aerobic or facultative, non-motile bacteria.

Gingivitis Etiology

In the 1960's the classic studies of experimental gingivitis by Theilade, Loe, et al., (1966) demonstrated clearly the sequence of events occurring in plaque and gingival tissues when plaque is allowed to develop in a healthy mouth. These experiments established for the first time a direct cause-and-effect relationship between microorganisms in plaque and developing gingival disease in the adjacent tissues. When plaque was allowed to accumulate, all subjects developed gingivitis within 15-17 days. When plaque was removed, gingival inflammation resolved and tissue health was restored within one week. This experiment provided a stimulus for renewed investigation of the role of microorganisms in periodontal disease.

Within the first several days after plaque begins to accumulate along the gingival margin, the increase in plaque mass is due primarily to proliferation of gram-positive streptococci and *Actinomyces* species. By 5 to 7 days filamentous organisms and fusobacteria appear, and by 10-14 days, when clinical gingivitis begins to appear, the plaques become more complex with a decrease in the relative proportions of cocci and an increase in motile organisms such as spirilla and spirochetes. (Theilade, Wright, Jensen, and Loe, 1966) As plaque begins to grow subgingivally, the motile gram-negataive organisms are found primarily at the surface of subgingival plaque and, in addition, unusual morphologic forms termed "corn-cobs" project perpendicularly from the surface of supragingival plaque. (Listgarten, 1976) These corn-cob forms are thought to represent a symbiotic relationship between a filamentous organism and the cocci colonizing its surface.

The onset of gingivitis does not appear to be as closely correlated to the ingrowth of specific bacteria as it is to the quantitative increase in plaque mass. Therefore, gingivitis appears to be bacteriologically non-specific and a result of the presence of increased quantities of bacterial metabolites, toxins and antigens adjacent to the gingival tissues. (van Palenstein Helderman, 1981)

Periodontitis Etiology

In typical adult periodontitis, the quantitative and qualitative features of supragingival plaques are variable and similar to those found in established gingivitis. However, the subgingival plaque increases in mass and complexity. Using electron microscopy, Listgarten (1976; 1975) has described two phases of subgingival periodontitis plaque. The plaque attached to the root surface is largely gram-positive, non-motile coccoid and filamentous organisms. In light microscopic sections, these are often found to be arranged in columns or rows of palisading bacteria. The other phase is an outer layer of loosely-attached, flagellated, largely gram-negative, motile organisms including numerous spirochetes. The degree of motility seems to increase as the bottom of the pocket is approached. In this location there is usually a layer of neutorphilic leukocytes between the plaque surface and the pocket epithelium. Some of the leukocytes contain ingested bacteria. Since it is the surface of the subgingival plaque where the gingival tissues most closely approximate the bacteria, it is thought that this is evidence of pathogenic potential of these motile, loosely-attached organisms.

Microscopic studies of in-situ subgingival plaques and examination of non-dispersed plaque samples have revealed additional complex morphologic forms illustrating interaction of various types of bacteria. In addition to corn-cob formations, "test-tube brushes" and rosettes have been described. (Listgarten, 1976) Keyes (Keyes and Rams, 1983) has described synchronized movements of rows of spirochetes and other organisms and has suggested that such movements are important in the ecologic conditions favoring bacterial survival in the subgingival space. Using dark-field microscopy Listgarten and Hellden (1978) stressed the importance of increasing bacterial motility in comparing diseased sites to healthy sites. The ratio of non-motile to motile organisms was 49:1 in healthy sites but was approximately 1:1 in diseased sites. Although it has been proposed that phase-contrast examination of subgingival plaque samples can be used to predict the risk of active disease, (Keyes and Rams, 1983) other studies have revealed the wide range of variability seen from site to site and mouth to mouth in both healthy and diseased sites. (Evian, Rosenburg, and Listgarten, 1982) At this time it seems premature to depend on microscopic examination of subgingival plaques to diagnose disease activity.

Cultural studies have attempted to identify specific bacteria associated with periodontitis. Some of the ones which have been identified as predominant cultivable subgingival bacteria associated with adult periodontitis are listed in Table 1. Those which seem to be most commonly encountered are gram-negative organisms such as *Fusiobacterium nucleatum, Bacteroides melaninogenicus* species, *Bacteroides gingivalis, Wolinella recta* and *Eubacterium* species. (Socransky, Tanner, and Haffajee, 1982; Moore, Ranney, and Holdeman, 1982; Slots, 1976; Williams, Pantalone, and Sherris, 1976; Tanner, Haffer, Bratthall et al., 1979) In addition, the gram-positive *Actinomyces* are frequent inhabitants of the subgingival flora. (Socaransky, Tanner, Haffajee et al., 1982; Moore, Raney, and Holdeman, 1982; Williams, Pantalone, and Sherris, 1976) Although it is not possible to culture the oral spirochetes, by morphologic assessment spirochetes are usually found to represent a high proportion of subgingival organisms, especially in sites with bleeding on probing and gingival inflammation. (Keyes and Rams, 1983; Armitage, Dickinson, Jenderseck et al., 1982)

Cultural studies of bacteria in juvenile periodontitis (formerly called periodontosis) have identified prominent inhabitants of these pockets to be two gram-negative organisms, *Actinobacillus actinomycetemcomitans (A.a.)* and *Capnocytophaga,* both non-motile, gram-negative rods. (Socransky, Tanner, Haffajee et al., 1982; Tanner, Haffer, Bratthall et al., 1979; Slots, 1976; Neman, Socransky, Savitt et al., 1976) Typically the subgingival plaque in juvenile periodontitis is much thinner than in adult periodontitis. (Listgarten, 1976) The finding that most patients with juvenile periodontitis have antibodies to *A.a.* has strengthened the concept that this could be an important pathogen in the disease. (Page and Schroeder, 1982).

HOST RESPONSE AND PATHOGENESIS

It is clear that an understanding of periodontal disease is based on a more thorough knowledge of the host-parasite interaction. The production of disease is a result of infection with microbes and the subsequent response of the host's defensive mechanisms, so assigning responsibility for disease development to one or the other system acting alone, as has been done frequently in the past, is not valid.

Much progress in research on host responses and pathogenic mechanisms has been achieved through use of animal models or *in vitro* laboratory techniques. Thus, even though our knowledge of potential mechanisms is increased, we lack a clear understanding of which of the mechanisms are active in the development of human disease. Certainly some of the known mechanisms contribute to development of human disease. The challenge for the future will be to discover the precise mechanisms acting in humans, and this knowledge should lead to improved means of preventing and treating disease.

In the late 60's and early 70's, considerable progress was made in providing a thorough description of the histopathology and ultrastructure of the lesions of gingivitis and periodontitis. Prior to that time, knowledge of histopathology had been based on examination of advanced periodontitis, after extensive destruction of periodontal tissues had already occurred. It became necessary to describe the histopathologic and ultrastructural changes during disease development, beginning with the earliest signs of gingival inflammation as seen in the experimental gingivitis model, up to the onset of destructive periodontitis. Page and Schroeder (1982) subdivided the developing lesion into initial, early, established and advanced stages and synthesized the existing knowledge from their work and the work of other investigators to provide a thorough description of the events observed at each stage. The initial, early and established lesions are stages of gingivitis, while the advanced lesion represents destructive periodontitis.

TABLE 1
PREDOMINANT MICROORGANISMS AND HISTOPATHOLOGIC FINDINGS ASSOCIATED WITH PERIODONTAL DISEASE

Tissue condition	Plaque morphology	Predominant organisms	Histopathology*
Healthy gingiva	supragingival 1-20 cell layers	Gram-positive, facultative flora S. sanguis S. mitis A. viscosus A. naeslundii Rothia dentocariosa	–scanty inflammatory cells
Initial-early gingivitis	supragingival 100-300 cell layers; "corn-cob" formations	Gram-positive, facultative flora Actinomyces sp. Streptococci	–PMN migration through J.E. and S.E. –lymphocyte infiltrate in C.T. –early loss of perivascular C.T.
Established gingivitis	supragingival	Gram-positive flora Actinomyces sp. Streptococci	–increased PMN migration through J.E. and S.E. –lymphocyte and plasma cell infiltrate in C.T. –loss of gingival C.T. but no loss of C.T. attachment to root
	subgingival	Gram-negative flora Fusobacterium nucleatum Campylobacter concisus Capnocytophaga species Spirochetes Veillonella parvula Bacteroides intermedius	
Destructive Periodontitis	supragingival 100-300 cell layers subgingival	Gram-positive flora	–continued migration of PMN through J.E. and S.E. –plasma cells predominate in C.T. infiltrate –loss of crestal bone and C.T. attachment –formation of pocket epithelium and periodontal pockets
	1. attached to root	Gram-positive	
	2. loosely-adherent..... (or "floating" (motile forms)	Gram-negative anaerobes Bacteroides gingivalis Fusobacterium nucleatum "Fusiform" bacteroides Spirochetes Wolinella recta Eikenella corrodens	
Periodontosis (Juvenile periodontitis)	supragingival		–plasma cells predominate in C.T. infiltrate –severe localized destruction of connective tissue and bone
	subgingival ..... thin	Gram-negative anaerobic rods Actinobacillus actinomycetemcomitans Capnocytophaga	
Acute Necrotizing Ulcerative Gingivitis (ANUG)	supragingival variable quantities mixed with "pseudo-membrane"	B. melaninogenicus ss intermedius Treponema	–neutrophil infiltrate –superficial necrosis of gingiva with "pseudomembrane" formation –invasion of normal C.T. by spirochetes

Key to Abbreviations: J.E. - junctional epithelium C.T. - connective tissue S.E. - sulcular epithelium PMN - polymorphonuclear neutrophils

Both clinicians and scientists have begun to realize that the term "periodontal disease" does not refer to a single disease. A number of different microorganisms seem to be capable of causing disease and many of these diseases have similar clinical manifestations of gingival inflammation, bleeding on probing, suppuration, loss of bone and connective tissue attachment, and pocket formation. However, sufficient differences in clinical, histopathological and microbiological features exist to allow categorization into at least five different forms of periodontal disease – adult periodontitis, rapidly progressive periodontitis, juvenile periodontitis, prepubertal periodontitis, and acute necrotizing ulcerative gingivo-periodontitis. (Page and Schroeder, 1982)

Forms of Periodontal Disease

Adult periodontitis is the most prevalent form of disease, the type most familiar to clinicians. It is probable that typical adult periodontitis is always preceded by a plaque-induced gingivitis. In many patients an established gingivitis develops and persists for a long

time before progressing to a destructive periodontitis with bone and connective tissue attachment loss. The reason for subsequent conversion of established gingivitis to periodontitis is not clear but perhaps involves infection with pathogenic organisms, alterations in host resistance, or both. Destructive adult periodontitis usually begins around age 30-35 and, in comparison with other forms of periodontitis, seems to progress rather slowly. The disease affects any teeth, although molars are usually most severely involved, (Hirschfeld and Wasserman, 1978; Becker, Berg, and Becker, 1979) and manifests both horizontal and angular bone loss. Gingival inflammation usually is not severe, and often the gingiva may look normal or fibrotic due to the chronic nature of the disease. Generally local etiologic factors such as plaque and calculus and plaque-retentive factors such as faulty restorative margins are present in amounts commensurate with the extent of disease. Some histopathologic features of the various stages in development of adult periodontitis, from gingivitis to destructive disease, are listed in Table 1.

Recently a form of severe periodontitis occurring in young adults has been described. This disease has been termed rapidly progressive (RP) periodontitis, since advanced bone destruction and attachment loss occur much faster (within weeks or months) than is the case in adult periodontitis. RP periodontitis has its onset between puberty and approximately age 30 and may or may not follow a bout of juvenile periodontitis. In the active disease stage the gingiva usually is acutely inflamed and may show proliferation of the margins. Any or all teeth may be affected, in contrast to typical juvenile periodontitis which affects the molars and incisors. As many as three-fourths of the patients with RP periodontitis have defects in the chemotaxis or phagocytosis of their circulating neutrophils or monocytes. Recent studies have shown that the pockets of patients with RP periodontitis harbor large numbers of *Bacteroides* species or *A.a.,* and that most of these patients have serum antibodies to the microorganisms. (Page and Schroeder, 1982; Pagae, Altman, Ebersole et al., 1983; Vandesteen, Williams, Ebersole, Altman, and Page, 1984)

As mentioned before, the classic form of the disease termed juvenile periodontitis (previously termed periodontosis) is characterized by bone loss and pocket formation involving the permanent first molars and incisors. However, not all of these teeth are involved in all patients. The disease starts at puberty and, like RP periodontitis, destruction occurs very rapidly. Unlike RP periodontitis, the affected gingival tissues usually do not show much gingival inflammation clinically. Females are affected about three times as often as males. It has been stated that the affected teeth usually have little supragingival plaque deposits, (Page and Schroder, 1982) but a recent study contradicts this concept. (Burmeister, Best, Palcanis et al., 1984) Most, but not all, patients with JP have large numbers of *A.a.* in the pockets and serum antibody to *A.a.* (Slots, 1976; Slots, 1976; Vandesteen, Williams, Ebersole et al., 1983; Ebersole, Taubman, Smith et al., 1982) *A.a.* produces a potent exotoxin (leukotoxin) which affects leukocyte function and may be responsible for the defects in neutrophil chemotaxis seen in most individuals with this disease. (Page and Schroeder, 1982) Contrary to previous thinking, studies have now shown that JP can be treated rather successfully by surgical or non-surgical debridement of bacteria and systematic antibiotic therapy. Following such treatment partial regeneration of lost alveolar bone is often observed. (Page and Schroeder, 1982; Lindhe, 1982)

Since prepubertal periodontitis is a rare condition, little is known about it. A recent publication by Page, et al. (1983) described five cases and outlined some of the features of this disease. Two forms were described, localized and generalized. The localized form begins soon after primary tooth eruption and is characterized by mild gingival inflammation, pocket formation and bone resorption around some, but not all, of the primary teeth. The affected individuals may have a chemotactic deficiency in neutrophils or monocytes, but not both cell types. Generalized prepubertal periodontitis is characterized by a much more severe clinical course with extreme gingival inflammation, recession and cleft formation, and rapid bone loss sometimes accompanied by root resorption. Profound chemotactic defects were found in both neutrophils and monocytes. These individuals often suffer from otitis media and recurrent skin and upper respiratory infections.

The pathogenesis of acute necrotizing ulcerative gingivitis (ANUG) is also poorly understood. Recently Loesche (Loesche, Syed, Laughon, and Stoll, 1982) claimed to confirm the fusospirochetal etiology of this disease and reported that the fusiform and spirochetal organisms associated with the disease are *B. melaninogenicus* subspecies *intermedius* and a *Treponema* species, respectively. Certain hormones, such as corticosteroids, produced by the host under stress may serve as growth factors for the above organisms and favor their proliferation in the lesion. (Loesche, Syed, Laughon, and Stoll, 1982; Loesche, 1968)

This review would not be complete without mention of the potential mechanisms of tissue destruction investigated in recent years. These mechanisms are most conveniently listed as (1) those associated with bacteria and (2) those associated with host response to infection.

Bacterial Mechanisms of Tissue Destruction

For many years investigators have proposed that substances released by bacteria colonizing pockets can diffuse through the epithelium and initiate destructive processes. Bacterial products such as enzymes (collagenase, hyalyronidase, etc.), toxins (endotoxin, peptidoglycan, etc.), and acids produced locally have the potential to destroy tissue components if present in sufficient concentrations. Evidence is available to show that bacterial antigens (Ranney, 1978) and endotoxin (Schwartz, Stinson, and Parker, 1972; Simon, Goldman, Ruben, and Baker, 1971) are present in the disease gingiva and pocket fluid. To what extent these bacterial products damage tissue is not known, but it seems unlikely that such agents could be found in great enough concentration to be responsible for the destruction of connective tissue and bone in the deeper aspects of the periodontium.

Of perhaps greater pathologic significance than diffusion of bacterial products is invasion of the periodontal tissues by bacteria during disease development. For many years only a few isolated reports of bacterial invasion were published in the periodontal literature, and most investigators considered these findings to be caused by technical artifacts in tissue preparation for histopathologic examination. Recently a

number of publications have demonstrated bacterial invasion of pocket epithelium, inflamed and normal gingival connective tissue, and alveolar bone from patients with various forms of periodontal disease. (Frank and Voegel, 1978; Frank, 1980; Saglie, Newman, Carranza, and Pattison, 1982; Gillett and Johnson, 1982; Allenspach-Petrzilka and Guggenheim, 1983) Most tissue specimens were taken from patients with severe, advanced disease or localized juvenal periodontitis. Cocci, rods and filaments have been observed in the tissues, and both gram-positive and gram-negative cell wall structures have been described. There have been no reports of bacterial invasion in gingivitis or early periodontitis, except for Listgarten's early report of spirochete invasion of gingival connective tissue in ANUG. (Listgarten, 1965) At this time it appears that bacterial invasion may not be a universal feature of periodontal diseases, but the observations suggest that it may occur as a mechanism of the active disease process or in certain severe forms of periodontal disease. (Allenspach-Petrzilka and Guggenheim, 1983)

Host Mechanisms of Tissue Destruction

There are a variety of host response mechanisms initiated by infection, and most of these responses have the potential to be either protective or destructive. These mechanisms are components of the inflammatory and immune systems and usually involve not only the cells of these systems, but also the release of various biologically active molecules and serum components which are capable of initiating destructive processes in the tissues. Some of the mechanisms which are potentially destructive to the periodontal tissues are infiltration of neutrophil and mononuclear leukocytes with release of hydrolytic enzymes such as collagenase which can degrade components of the connective tissue matrix, activation of B and T lymphocytes leading to release of immunoglobulins and/or lymphokines, alteration of fibroblast and osteoblast growth and synthetic activities by serum components, lymphokines, bacterial substances, etc., and bone resorption initiated by some of the same biologically active substances derived from the host cells or by bacterial metabolites. (Page and Schroeder, 1981) The lymphokines, are a group of molecules released by lymphocytes and plasma cells following specific antigenic activation or non-specific, polyclonal stimulation. Some lymphokines attract increased numbers of leukocytes into the lesion (chemotaxis), injure or kill fibroblasts, slow the migration of macrophages out of the site of inflammation, or initiate bone resorption. Thus a number of potentially injurious substances can be released into the tissues at the site of inflammatory reactions, and the concept that at least some of the agents may contribute to tissue destruction is an attractive one. (Page and Schroeder, 1982)

For several decades there has been controversy over whether the immune response in the diseased gingiva is protective or destructive. The concept that the immune response contributes to destruction has been supported by observation of the massive gingival infiltration of lymphocytes and plasma cells in destructive disease and the demonstration that many patients have circulating antibodies to members of the periodontal flora. During the past decade this concept has been investigated and new information is now available. Clagget and Page (1978) demonstrated that there is essentially no immune complex formation (deposits of antigen and antibody) in diseased gingiva, thus demonstrating that most gingival plasma cells are not producing specific antibodies directed toward periodontal bacteria. Furthermore, several studies of patients with genetic or induced deficiencies of the immune system have revealed that these individuals do not have more severe periodontal destruction than diseased control populations. To the contrary, most persons with immune deficiencies have milder gingival inflammation and less severe periodontal destruction than expected. Data from human and animal studies indicate that the T-lymphocyte infiltrate in gingivitis may contribute to the limited connective tissue destruction in this stage of disease; however, a B-lymphocyte infiltrate, mostly plasma cells, is predominant in the periodontitis lesion. Although it is possible that certain mechanisms of immune responses may contribute to tissue destruction, the current evidence suggests that immune reactions are primarily protective, especially in certain forms of disease such as juvenile periodontitis and rapidly progressing periodontitis. (Page and Schroeder, 1982)

Currently it appears that perhaps the major determinant in maintenance of periodontal health is an intact, normally functioning system of circulating leukocytes, primarily neutrophils and monocytes. The optimal daily protection of the host against microbiol colonization, proliferation and invasion appears to be mediated by these cells, especially the neutrophils. This is illustrated by the severe, rapidly progressing forms of disease seen in patients with leukopenias or compromised leukocyte function. Defects in neutrophil and/or monocyte chemotaxis and phagocytosis in JP and RP periodontitis, as discussed earlier in this review, are examples of compromised leukocyte function which lead to early onset, severe destruction of the periodontium. (Page and Schroeder, 1982) At this time it is not possible to reverse defective leukocyte function, at least in most cases, but early identification of the leukocyte defect might be useful in terms of preventive measures.

DIAGNOSTIC CONSIDERATIONS

It is not the purpose of this review to discuss the extensive literature in diagnostic methods in periodontics. However, current concepts of patterns of disease progression should be reviewed as these may have a profound effect upon periodontal diagnosis and therapy in the future.

Until recently, the prevalent concept of natural history of periodontal disease has pictured the disease as a slowly progressing continuous process which results in a gradual, cumulative loss of attachment over many years. The cross-sectional epidemiologic data supported this concept since it revealed a disease process which continuously increased in severity as the age of the population increased. Epidemiologic studies use mean measurements of many sites in large populations of individuals. Therefore, it is likely that the data may mask the true pattern of change which occurs in individual patients and individual sites around the teeth.

Few studies of natural history have been available, but a study by Loe, et al., (1978) examining Norwegian and Sri Lankan populations over approximately a 7-year period also supported the con-

cept of continuously progressive disease. Their calculations determined the annual rate of attachment loss in the untreated Sri Lankan population with no oral hygiene practices to be approximately 0.2-0.3mm per year, depending on the tooth surfaces examined.

Recently Socransky and colleagues at Forsyth Dental Center have monitored attachment levels of periodontal patients over long periods of time. Based on their findings they have proposed a concept of disease progression occurring as bursts of activity at random sites in the periodontium. (Socransky, Haffajee, Goodson, and Lindhe, 1984) The brief periods of disease activity seem to be followed by periods of remission which may persist indefinitely. In this model of disease, previously diseased sites seem to be at no greater risk of additional breakdown than non-diseased sites, in spite of the presence of periodontal pockets. There are data from other human and animal studies which support the concept of disease progressing in cycles of exacerbation and remission.

If the above model is proven correct, it could have tremendous significance upon diagnosis and treatment methods. Currently periodontal probing is the main diagnostic criterion used by the clinician, but it provides only a record of destruction from past disease activity and does not reveal actively progressing disease. Clinical signs such as suppuration and bleeding upon probing are indicators of inflammation and also do not indicate active disease. (Davenport, Simpson, and Hassell, 1982; Greenstein, 1984) Therefore, the clinician is left with an inadequate means of diagnosing the disease he is attempting to treat, but therapy has to be directed toward prevention of further disease activity. At this time we must await the development of more accurate diagnostic tests.

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Defining the Problem of Periodontal Diseases in Society

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Introduction

Attempts to define the extent to which the periodontal diseases represent a problem are attracting much more interest for a number of reasons. First, dental decay, long the primary target of public and private dental practice, has declined during the 1970's and 1980's. (Glass, 1982) The drop in levels of dental decay contrasts with levels of the periodontal diseases which are thought to be widespread. Second, changes in dental caries patterns have led the dental profession to view dental diseases not as a stable phenomenon but as a changing picture needing continuous monitoring. Third, changing population demographics are perhaps affecting the prevalence of periodontal diseases. As the elderly in the United States increase in number and as they keep their teeth longer, the significance of periodontal disease may change. Fourth, as discussed by Simpson (1985) in the preceding paper, the traditional concept of periodontal disease as a single entity that progresses at a constant rate from mild to terminal stages without self-care and professional interventions has been questioned. This concept was based to a large extent on the linear relationship of age with periodontal disease as determined in epidemiological studies of large population groups. Therefore, there is a need to reexamine epidemiological data in light of new concepts of disease etiology and progression. Finally, the importance of looking beyond clinical practice at total populations to complete the picture for periodontal diseases and to answer precise questions about etiology, natural history and prevention is now recognized.

Epidemiological research methods can define the extent of the periodontal disease problem and answer a number of basic questions such as (1) Do periodontal diseases affect everyone or do they vary according to characteristics such as race, location of residence or lifestyle? (2) Is the prevalence and/or severity of the periodontal diseases great enough for them to be considered a problem of public health significance? (3) What are the consequences of uncontrolled periodontal diseases? (4) Have the amounts of periodontal diseases changed and what are the most likely trends? (5) Does a gap exist between the need for periodontal services and effective demand for services? (6) What do we know about the progression of periodontal diseases and can they be controlled?

The purpose of this paper is to review information that addresses these questions. North Carolina data will be used primarily, with other data and studies supplementing or confirming conclusions reached on the basis of North Carolina data.

Diagnosing Periodontal Diseases in North Carolina

Important questions about the periodontal diseases in North Carolina can be addressed using data from two surveys of the household population in the state. In a 1960-63 survey, approximately 7,200 individuals in 2,103 sample households were interviewed and given oral examinations; (Fulton, Hughes and Mercer, 1965) in 1976-77 approximately 3,500 individuals in 1,528 households were interviewed and examined. (Hughes, Rozier and Ramsey, 1982) These two surveys, comparable because of the almost identical manner in which they were designed and conducted, are thus ideally suited for studying trends in oral diseases. Basic sociodemographic and oral health status data were collected, including clinical measures of the periodontium evaluated according to criteria for health and disease defined by Russell (1956). These criteria include the presence and extent of inflammation, pocket formation, mobility and loss of function. The examination method did not call for the use of a periodontal probe to elicit bleeding or to measure pocket depth of loss of attachment; nor were radiographics used to record bone levels. Since this method makes no distinction between the different types of periodontitis, periodontal disease will be used in this paper to refer collectively to the different types of periodontal diseases. The method does allow a distinction to be made between gingivitis and periodontitis. The clinical information can also be converted into an index, referred to as the PI, that quantifies the severity of periodontal disease on a scale that increases from 0 to 8 as the severity of disease increases. This field survey method provides underestimates of disease levels and absolute treatment needs, but provides very reliable estimates for comparing periodontal disease status in one group of people with another at any one point in time or at different points in time. During the clinical examinations the amount and extent of debris and calculus were also recorded according to criteria defined by Greene and Vermillion (1964). Indices for debris (DI-S) and for calculus (CI-S) were calculated, with each ranging from

0 to 3 in order of worsening oral hygiene. Overall oral hygiene status is reported as an index (OHI-S) that combines debris and calculus with values ranging from 0 to 6.

Prevalence and Severity

Prevalence denotes the amount of disease, usually expressed as a rate or proportion of the population, present at a given point in time, like 1976-77. Prevalence should be distinguished from incidence, which is another common term used in epidemiology to denote the frequency with which new cases occur in the same group of individuals during a specified period of time. The prevalence depends on previous incidence and the duration or chronicity of disease. A third term, severity, is concerned with the stage of progression of disease.

The prevalence and severity of periodontal disease does vary according to important sociodemographic variables. This variation can be summarized as follows: the prevalence and severity of periodontal disease increase with advancing age; are much higher and more severe for blacks than whites; are greater for males of both races; increases with deteriorating oral hygiene; differ only slightly across the state or between urban and rural areas; and are inversely associated with social class and years of education. Some of these relationships are quantified for the North Carolina population by age and race categories in Table 1. While the proportion of the population unaffected by disease decreases with age, a somewhat reciprocal relationship exists between the proportion of those with gingivitis and those with periodontal pockets. Large differences in the prevalence and severity of periodontal disease by age and race are highlighted. However, blacks and whites have similar levels of tooth loss with roughly one out of every four in the age group 45-64 years and two of every four 65 and over having no natural teeth.

Several recent conferences and symposia have concluded that diseases of the periodontium are widespread. (Shanley, 1980; WHO, 1978; Cutress, April 1983; Hardin, Spring 1983; International conference on research in the biology of periodontal disease, 1977) Using strict clinical criteria such as color change and bleeding as indicators, for example, the majority of school children would be diagnosed as having gingivitis at some given point. Yet the extent to which gingivitis progresses to periodontitis and ultimately tooth loss resulting from periodontal disease is not fully understood. Page and Schroeder (1982) among others (Pilot, 1980; Schaub, 1979) suggest that severe periodontal disease affects a small proportion of the population and that the widespread nature of periodontal disease, especially adult periodontitis, has been overestimated. This conclusion is based on reviews of available epidemiological surveys, which in almost every case provide prevalence information. Before these conjectures can be answered, the incidence of gingivitis and the rate and frequency with which it progresses in severity must be determined in large-scale population-based surveys.

The data for North Carolina suggest that the prevalence and severity of disease is high in dentate individuals and should be considered a public health problem (Table 1).

Table 1.
Tooth Loss and the Level of Periodontal Disease in a Sample of 2,331 Adults Aged 18 and Over, North Carolina, 1976-77

Age Group	Percent Edentulous	Dentate: Mean No. of Teeth	Dentate: % With No Disease	Dentate: % With Gingivitis	Dentate: % With Pockets
WHITE					
18-44	6.0	25.4	43.7	48.4	7.9
45-64	25.9	21.3	33.3	38.4	28.3
65+	56.3	15.4	27.4	33.0	39.6
BLACK*					
18-44	2.0	25.8	19.0	57.3	23.7
45-64	23.0	21.5	13.4	26.8	59.8
65+	52.5	13.9	6.9	20.7	72.4

*Includes 5.5% other minorities.

Impact of Periodontal Disease

Nationally, oral conditions result in a significant amount of impairment of social functioning. In 1981, 4.87 million acute dental conditions resulted in 17.7 million days of restricted activity, 6.73 million days of bed disability, and 7.05 million days of work loss. (Resine, 1985) The economic impact of oral disease is also substantial. For example, the total dental health care bill for the nation in 1983 amounted to $22 billion. (Gibson, Levit, Lazenby and Waldo, 1984) Expenditures for services specifically related to periodontal disease are not available, but 1980 national expenditures for curettage, scaling and root planing alone were estimated to be $0.35 billion. (Gillings, Sollecito and Douglass, 1983) Total expenditures for treatment and repair resulting from periodontitis have been estimated at $4 billion each year. (Proceedings from the State of the art workshop on surgical therapy for periodontitis, 1982) The cost for periodontal preventive services add significantly to the total health care bill. The cost to individuals or society of treatment for those having disease and not receiving care would add billions of dollars more.

The potential for detrimental effects of periodontal disease on health is also considerable. Tooth loss, either partial or total, is a significant public health problem in North Carolina. Roughly one out of every four adults is edentulous. An additional 10 percent have no teeth in a single arch. A review of available tooth loss studies indicated that while dental caries and periodontal disease contribute about equally to tooth loss, and together account for about 80 percent of the total, the significance of the two diseases varies by age. Dental caries is the most important determinant before age 30. During the age span from 30 to 40, extractions because of periodontal disease increase rapidly and exceed those caused by caries for the remaining years. (Waerhaug, 1966)

In the last national adult dental survey teeth needing extraction were noted along with the primary reason at the time of examination. (Kelly and Harvey, 1979) Depending on age roughly 5 to 10

percent of adults needed one or more teeth extracted, and of these a little over 11 teeth per person needed to be extracted. Periodontal disease accounted for 50 to 70 percent of needed extractions. Less than 15 percent of these teeth needed extractions for decay, the remainder for reasons other than decay such as prosthodontics treatment. A recent review of the nutritional effects of tooth loss has turned up surprising findings such as its effect on mortality figures. (Geissler and Bates, 1984) Choking on food, a major cause of accidental death, can often be attributed to lack of adequate chewing of endentulous individuals. Food choices are also affected by tooth loss.

While little research has been done in the area and empirical evidence is lacking, the potential for periodontal disease to contribute in a substantial way to the total impact of oral diseases is significant since it may result in large costs to society or individuals, lead to restricted activity, school or work loss days, affect eating ability and choice of foods, affect one's self-concept due to changed appearance and cause anxiety and fear. In fact, it has been suggested that the social costs of dental conditions that affect almost everyone may be as great as those of cancer and heart disease that affect a smaller segment of the population. (Resine, 1985)

Trends in Disease

As the need for greater attention to the prevention and control of periodontal disease receives more and more public debate, the question of future prevalence of the disease and the number of providers needed to meet the need for periodontal treatment inevitably surfaces. There seem to be four views on periodontal disease trends in the dental literature. The most common view is that the prevalence of periodontal disease is widespread and has remained unchanged at this level. (WHO, 1978) A second view is that the prevalence is widespread and may actually be increasing in some groups such as the elderly (Douglass, 1983) or minorities. (Hughes, Rozier and Ramsey, 1982) A third view is that prevalence is widespread but is now declining. (Douglass, 1983) A fourth view is that the prevalence is lower than generally suspected and may be declining rapidly to the extent that in the future it may not represent a very large economic and treatment burden for society or the profession. (Page and Schroeder, 1982; Page, 1984) Finally, there is the view that we are unable to determine trends because of a complete absence of data, lack of current data, or an inability to measure the problem because of measurement difficulties or characteristics of the disease itself. (Jenkins and Mason, 1984) Without question, the picture is confused at the present time.

Table 2.
Changes in Mean PI scores by Race and Grouped Ages, North Carolina and United States

Race	Age Group	NC		US	
		1960-63	1976-77	1960-62	1971-74
White	18-44	0.53	0.62	0.75	0.69
	45-64	1.40	1.45	1.43	1.42
	65-74	1.84	2.15	2.00	2.17
Black	18-44	0.56	1.36	1.12	1.26
	45-64	1.46	2.85	2.36	2.78
	65-74	2.45	3.71	2.48	3.82

We are better able to examine trends in North Carolina than any other state, however. In general North Carolina probably falls into the first category. Surprising results are obtained, however, by race. (Table 2) The prevalence of periodontal disease was found to be slightly greater in the white population in 1976-77 than it was in 1960-63. This increase was due to an increase in gingivitis. The prevalence of periodontitis, on the other hand, was slightly improved in some age groups. During the 15 year interval between the two studies, there was a large increase in periodontal disease in blacks, especially males. Increases occurred in the milder forms of disease at almost every age, but after age 35 more severe forms increased. The changes were of such severity and magnitude that it is very unlikely that they are due to measurement or sampling error alone.

These trends in blacks in North Carolina are confirmed by national trends observed by comparing two national surveys. (Kelly and Harvey, 1979; Kelly and Van Kirk, 1965) (Table 2) Speculation concerning reasons for these trends by race raises important issues concerning the relationship of social, economic and dental variables and the need for monitoring dental disease by selected social and economic variables. Other epidemiological measures of oral health status among blacks indicate that their oral health in general may be deteriorating. For example, dental caries has not improved to the extent that it has in whites. There has also been a worsening of oral hygiene which is most likely the primary reason for these changes.

Treatment Needs and Effective Demand for Services

Estimates on any discrepancy that might exist between treatment needs and effective demand for periodontal services is available from the North Carolina Dental Manpower Study. (Bawden and De Friese, 1981) Excluding the 264,000 persons with periodontitis severe enough to require extractions, it was estimated that approximately 834,000 North Carolinians required treatment for periodontitis by a general dentist or periodontist in 1976. Each year another 36,000 would develop periodontitis requiring treatment. Approximately 746,000 hours of dentists' time would be required to meet these needs. Only 97,000 hours of periodontal care were provided, however. It is clear that the existing need in the population is not being translated into demand. Almost eight times more treatment was needed than practitioners provided at 1976 supply levels, representing an effective demand of about 14 percent. While this gap may have closed over the past several years, a significant potential for delivering periodontal services remains.

Prevention and Control

The increase in the prevalence of periodontal disease and in poor oral hygiene status with increasing age observed in oral health surveys was noted earlier in the paper. The results of an analysis for those with 21 or more

Table 3.
Periodontal Disease and Oral Hygiene in a Sample of 1150 Whites Aged 18 Years and Over With 21 or More Teeth; Oral Hygiene in Those Free of Periodontal Disease; North Carolina, 1976-77

Age Group	N	All			Disease Free			
		Mean PI	Mean OHI-S	Mean CI-S	% of Total Dentate	Mean OHI-S	Mean CI-S	Mean DI-S
18-44	839	0.52	1.01	0.37	44.9	0.37	0.08	0.29
45-64	278	0.92	1.18	0.54	39.9	0.52	0.21	0.30
65+	33	1.54	1.61	0.88	27.3	0.39	0.13	0.26

teeth are presented in Table 3 and allow us to examine the phenomenon further. For the total subset of the data results are consistent with this concept. However, if risk factors for those showing no evidence of periodontal disease are examined, the linear association of age and oral hygiene is not evident. Twenty-seven percent of the dentate population has reached 65 years of age and has both a significant number of remaining teeth (a definition including at least one molar) and no periodontal disease. Data presented in this table suggest two conclusions. First, even though some biological resistance to disease may be involved in the absence of disease in these individuals and they thus represent "tooth survivors", it seems that it is possible to control periodontal disease and preserve a relatively intact and functional dentition throughout life. Periodontal disease and tooth loss are not inevitable. Second, it seems that similar levels of oral hygiene throughout life are consistent with an absence of disease. These findings suggest useful goals for preventing and controlling periodontal disease in large population groups.

Summary and Conclusions

Periodontal disease is a complex and perplexing problem with numerous interrelated factors contributing to its prevalence and severity. There are no easy solutions for its prevention and control. This review of the epidemiology of periodontal disease in North Carolina has led to a number of conclusions. The problem is widespread enough and serious enough to be considered a social problem of significant importance. The social, economic and health consequences of the disease are severe, adding to its significance as a problem. Combined with clinical studies, epidemiological studies suggest that there is the potential for control and prevention of periodontal disease and its consequences. Yet there is sufficient evidence that scientifically proven methods for prevention and control are not being used to the extent necessary to control disease. A strong rationale for initiatives in this area thus emerges. Through creative and rational planning the problem of periodontal disease can be controlled. Finally, there is the need to continually monitor the disease levels in populations to follow trends in the disease, its magnitude, its distribution and the impact of various initiatives for prevention and control.

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Continued on page 30

Continuing Dental Education CALENDAR

The University of North Carolina School of Dentistry

Date, Course, Title, Lecturer, Cost, Credit, Synopsis

SEPTEMBER

September 5-6, 1985
Current Concepts in Conservative Esthetic Dentistry, Sponsored by the Department of Operative Dentistry, Faculty: Dr. Harald Heymann, Dr. Dave Brunson, and Dr. Ted Roberson, Cost: $425.00, Credit: Approved by the AGD for 33 hours of credit including 11.5 hours in-office, Final Session is November 15, 1985, Synopsis: This program will present the latest information on composite resin materials along with numerous clinical procedures utilizing the acid etch technique. An overview of the various new materials will include information about conventional composites, microfilled resins, dentin bonding agents, and light curing systems with special emphasis on their clinical performance. Among the conservative esthetic procedures to be discussed will be modified cavity preparations (including Class II, III, IV and V preparations), esthetic recontouring, treatment of hypoplastic areas, diastema closure, and posterior composite restorations. Information will be included on exciting, new veneering techniques and the use of opaquing agents. An overview of splinting periodontally involved teeth with composite resin will also be presented. ENROLLMENT LIMITED.

September 9, 1985
Nitrous Oxide Sedation for Dental Auxiliaries, Sponsored by the Department of Oral and Maxillofacial Surgery, Faculty: Dr. Myron Tucker and Dr. Ray White, Cost: $75.00, Credit: 7.8 hours, Synopsis: This course is designed to provide the dental auxiliary with current concepts of the use of nitrous oxide in the dental office. The course will cover the basic properties and pharmacotherapeutics for nitrous oxide. This will include techniques of monitoring nitrous oxide administration and recognition of possible complications. Occupational exposure to nitrous oxide will also be discussed. ENROLLMENT LIMITED.

September 19-20, 1985
Molar Endodontics for the Generalist, Sponsored by the Department of Endodontics, Faculty: Dr. Joel Leeb and Dr. Gunnar Bergenholtz, Cost: Dentists - $175.00, Auxiliareis - $100.00, Credit: 15.6 hours, Synopsis: This course is designed for the general practitioner who performs conventional endodontic procedures on single rooted teeth and desires to improve his skills in order to expand his range of service to include multi-rooted teeth, especially molars. All aspects of diagnosis, emergency management, conventional treatment and post treatment evaluation of the tooth will be discussed during the morning sessions. In the afternoons, there will be laboratories devoted to performing endodontic procedures on extracted molar teeth and demonstrations by the faculty on patients utilizing the techniques that are discussed during the morning lectures and performed in the laboratory. ENROLLMENT LIMITED.

September 20, 1985
The Role of the Dental Hygienist in Periodontics Now and in the Future, Sponsored by the Department of Periodontics, Faculty: Dr. David M. Simpson and Dr. Walter T. McFall, Jr., Cost: Auxiliaries - $95.00, Credit: 7.8 hours, Synopsis: Many of the adult patients in a general dental practice exhibit some degree of periodontal disease that requires more definitive therapy than routine prophylaxis. There are also patients who have had periodontal therapy and require a maintenance regime consisting of subgingival scaling, root planing and debridement as well as reinforcement of special plaque control measures. This course is structured to provide the dental hygienist with didactic instruction in the most current concepts of root planing and periodontal maintenance therapy. Discussion of chemotherapy and dental desensitization is included. The course will also focus on the microbiology of inflammatory periodontal disease; use of the periodontal probe; simplified periodontal charting, methods of evaluating plaque and current methods for plaque control and motivation for the periodontal patient. Instrument sharpening will be stressed and a laboratory session on instrumentation and instrument sharpening will be included. A self-instructional booklet on instrument sharpening and a recommended sharpening stone are included in the cost of the course. ENROLLMENT LIMITED.

September 27, 1985
Restorative Update 1985, Sponsored by the Department of Operative Dentistry, Guest Speaker: Dr. Gordon Christensen, Cost: Dentists - $115.00, Auxiliaries - $30.00, Credit: 7.2 hours, Synopsis: This course is designed to update practitioners in many of the currently pertinent areas of restorative dentistry. Included will be new techniques, material devices and concepts in varied areas of dentistry. The following and other subjects will be reviewed:

- Office asepsis and protection from disease
- Update of various materials including
  - Amalgam alloys
  - New impression materials
  - New crown build-up materials
  - Bone augmentation materials
- Current information on Maryland Bridge
- Conservative esthetic materials and techniques including
  - Wide diameter curing lights
  - Opaquing agents
- Use of apex locators
- Low cost, precision attachments
- Status report of posterior composite resins

About the Speaker: Dr. Christensen is founder and Co-Director with Rella Christensen of Clinical Research Asso-

ciates, a group of 240 dentists who evaluate dental materials and devices and conduct clinical research. Dr. Christensen also engages in private practice in Provo, Utah; participates on the post-graduate faculties of many dental schools; and is an adjunct Professor at Brigham Young University and a Clinical Professor at the University of Utah.

September 27, 1985
Impression Taking and Study Model Production for the Dental Auxiliary, Sponsored by the Department of Dental Ecology, Faculty: Ms. Donna Warren and Ms. Jan Carlton Holland, Dental Hygiene Program, Ms. Lynn Smith and Ms. Trudy Clark, Dental Assisting Program, Cost: $75.00, Credit: 7.8 hours, Synopsis: Since the North Carolina State Board of Dental Examiners legalized impression taking by dental hygienists and dental assistants II, the dental auxiliary must be current in the knowledge and skills required to perform this function. This course is designed to provide the practicing dental auxiliary with an understanding of the clinical techniques for taking impressions for production of study models. Emphasis will be placed on the clinical considerations of material and products in common use. Demonstrations and practice in taking alginate impressions, pouring and trimming stone models will provide an opportunity to develop clinical skills. ENROLLMENT LIMITED.

OCTOBER

October 4-5, 1985
Diagnosis and Treatment Planning in Fixed Prosthodontics, Sponsored by the Department of Fixed Prosthodontics, Faculty: Dr. William D. Sulik, Dr. Gene Holland and Dr. David Koth, Cost: $700.00, Credit: Approved by the AGD for 72 hours of credit including 30 hours in-office, remaining sessions' dates to be decided, Synopsis: At the completion of this course, the participant should be able to: 1) perform a comprehensive clinical evaluation of a patient with extensive restorative needs; 2) place in proper perspective those periodontal factors of significance in diagnosis and treatment planning in fixed prosthodontics; 3) plan the restoration of occlusion for patients with fixed prosthodontic needs; 4) evaluate potential abutments for fixed partial dentures, including rationale for use of multiple abutments; 5) design fixed prostheses (including retainer, pontic and connector designs), and understand the rationale for various designs; 6) develop a comprehensive treatment plan including design of prostheses and sequence of treatment for patients requiring extensive fixed prostheses. ENROLLMENT LIMITED.

October 4, 1985
New Ways to Put Periodontics in Your Practice, Sponsored by the Department of Periodontics, Faculty: Dr. L. H. Hutchens and Dr. George W. Greco, Cost: Dentists - $110.00, Auxiliaries - $25.00, Credit: 7.8 hours, Synopsis: Every dental practitioner must honestly ask themselves this question – "Am I providing my patients proper examination and treatment for their periodontal needs?" If you are unsure or your answer is no, then you need to consider whether this course might rejuvenate your interest in this phase of your practice. Current research indicates that most inflammatory disease can be treated in the general dental office. This course is designed to update you on disease activity and its control. Practical information is offered that should help you improve the health of your patients and increase your financial benefits. The focus is on optimal patient care.

October 11, 1985
Minor Oral Surgery for the General Dentist, Sponsored by the Department of Oral and Maxillofacial Surgery, Faculty: Dr. Cecil R. Lupton, Cost: Dentists - $100.00, Auxiliaries - $30.00, Credit: 7.8 hours, Synopsis: The topics presented in this review course include management of minor dentofacial trauma, complicated exodontia with panographic localization and diagnosis, surgical endodontics, preprosthetic surgery (minor and major), orthognathic surgery (major), and local anesthesia. Course objectives are: 1) Review of basic surgical principles and application to the oral cavity, 2) Review of techniques for specific situations encountered in daily practice, 3) Review of impaction techniques, 4) Dissemination of knowledge regarding advances in oral surgery to enhance patient education and rehabilitation, 5) Enhance the ability of the general practitioner to participate in the diagnosis, care, and treatment of patients needing and receiving treatment beyond the scope of general practice.

October 11, 1985
Resin-Retained Bridges, Sponsored by the Department of Operative Dentistry, Faculty: Dr. Harald O. Heymann, Dr. John R. Sturdevant, and Dr. W. D. Brunson, Cost: $125.00, Credit: 7.2 hours, Synopsis: Short spans of missing teeth can be replaced by acid etching and bonding a pontic to the adjacent natural teeth. Three types of pontics are used for these conservative bridges including natural tooth pontics, denture tooth pontics and porcelain pontics with a metal framework. Although the three types differ in the degree of permanency, they all share a major advantage – conservation of natural tooth structure. In addition, they can be viable alternatives to conventional fixed bridges in circumstances where age, expense, or clinical impracticality are considerations. Indications and clinical procedures will be discussed for each of three types of bridges in a morning didactic session. An afternoon participation session will offer the opportunity for "hands-on" practice of the techniques presented earlier. Natural tooth dentoforms will be available for participant use. ENROLLMENT LIMITED.

October 18, 1985
The Role of Dental Auxiliaries in the Application of Pit and Fissure Sealants, Sponsored by the the Department of Pediatric Dentistry, Faculty: Mr. Bill Vann and Dr. Tom McIver, Pediatric Dentistry, and Ms. Jan Holland, Dental Ecology (Dental Hygiene Program), Cost: $80.00, Credit: 7.8 hours, Synopsis: This course will provide current information on the use of pit and fissure sealants for the prevention of dental caries. Topics to be discussed will include: the history of sealants, the rationale for placement of sealants, the indication for sealants and the effectiveness of sealants in reducing dental caries. Also included will be a review of sealant products and their technique for sealant placement. Professional concerns limiting the use of sealants will be discussed. Participants will apply sealants on extracted teeth using a variety of different sealant systems. **Please note: All course participants should bring 5-6 extracted permanent premolar teeth free of caries or restorations. ENROLLMENT LIMITED.

October 21-22, 1985
Nitrous Oxide Sedation, Sponsored by the Department of Oral and Maxillo-

facial Surgery, Faculty: Dr. Myron R. Tucker and other members of the department, Cost: $225.00, Credit: 15.6 hours, Synopsis: This course is designed to provide the dentist with a working knowledge of the current concepts of acute pain and anxiety control, with emphasis on nitrous oxide relative analgesia. This course will cover techniques of emergency life support including airway management. Patient physical and psychological evaluation will be discussed together with considerations in treating the patient with concomitant medical problems. The pharmacotherapeutics of nitrous oxide and the sedative experience will be emphasized. The teaching format will be demonstration and lecture, participation, self experience and administration of nitrous oxide. ENROLLMENT LIMITED.

NOVEMBER

November 1, 1985
Conservative and Esthetic Dentistry, Sponsored by the Department of Operative Dentistry in conjunction with Northwest AHEC, Guest Speaker: Dr. Lee Sockwell, Location: Winston-Salem, N.C., Cost: Dentists - $110.00, Auxiliaries - $30.00, Credit: 7.2 hours, Synopsis: A great need exists for esthetic and conservative treatment procedures. Ever increasing numbers of composite resins are advocated for use in the anterior as well as in the posterior teeth. Which are reliable? The results of laboratory and controlled clinical studies will be presented. A review and update of materials and techniques for anterior teeth such as routing operative procedures, veneers, splinting, and diastema closure. Also included will be indications, contra-indications, and clinical evaluations of posterior composites. Three types of acid-etched, resin-bonded bridges will be discussed with emphasis on how to prevent and treat failures. Three projects will provide panoramic viewing of patients before, after and years later of successes and failures.

November 1, 1985
A Review of Clinical Research to Support Periodontal Therapy, Sponsored by the Department of Periodontics, Guest Speaker: Dr. Jan Egelberg, Loma Linda School of Dentistry, Loma Linda, California, Cost: Dentists - $120.00, Auxiliaries - $35.00, Credit: 7.8 hours, Synopsis: Provided at a later date.

November 1-2, 1985
Improving Periodontal Health Through Orthodontics, Sponsored by the Department of Orthodontics, Guest Speaker: Dr. Robert Boyd, Department of Growth and Development, UCSF School of Dentistry, San Francisco, California, Cost: Dentists - $295.00, Auxiliaries - $85.00, Credit: 15.6 hours, Synopsis: Provided at a later date.

November 8, 1985
Esthetic Considerations in Fixed Prosthodontics, Sponsored by the Department of Fixed Prosthodontics, Faculty: Dr. David A. Felton, Cost: Lecture Dentists - $125.00, Auxiliaries - $55.00, Lab Tech. - $75.00, Optional Participation Dentists - $125.00, Credit: 7.8 hours, Synopsis: This course is designed to provide the general practitioner and laboratory technician with a comprehensive understanding about how to evaluate, improve, and maximize the esthetic and functional potential of anterior crowns and fixed partial dentures. Topics will include pre-operative esthetic planning, tooth preparation and temporization, framework design, pontic design, recognizing and establishing appropriate prosthesis contours, shade selection, staining, and treatment alternatives including the newer all ceramic restorations. At the optional second session (date to be determined at the initial session), the D.D.S./D.M.D. participants will make case presentations of a patient treated in their office involving at least two anterior restorations.

November 15, 1985
Human Relations in the Dental Office, Sponsored by the Department of Operative Dentistry, Faculty: Ms. Linda Stewart, Cost: $55.00, Credit: 7.2 hours, Synopsis: Every dental practice is a social system involving the dentist, dental auxiliaries and patients. Many apparent office problems are actually conflicts among people, of human relations problems. One's ability to handle these problems constructively and work harmoniously with others is essential to success, and of particular importance in the group of affiliate practice setting. This seminar is designed to improve interpersonal relations through increased self awareness and application of appropriate communication strategies.

November 22, 1985
Clinical Applications of the Acid Etch Technique (With Special Emphasis on Application for Children: Sealants, Posterior Composites, Preventive Resins, etc.), Sponsored by the Department of Pediatric Dentistry, Guest Speaker: Dr. Richard J. Simonsen, Department of Restorative Dentistry, University of Connecticut Health Center, Farmington, Connecticut, Cost: Dentists - $110.00, Auxiliaries - $25.00, Credit: 7.2 hours, Synopsis; Provided at a later date.

November 22, 1985
Role of the Auxiliary in Pediatric and Adolescent Dentistry, Sponsored by the Department of Pediatric Dentistry, Faculty: Dr. Diane Dilley, Cost: $70.00, Credit: 7.8 hours, Synopsis: This course will provide information to dental auxiliaries regarding current dental treatment philosophies and practices for the child and adolescent patient. Topics to be discussed will include: the toothbrush prophy and fluorides, sealants, behavior management of children and pediatric radiographic techniques. Occupational hazards in the dental office and their management will be presented including: nitrous oxide exposure and management of patients with infectious diseases.

FUTURE PROGRAMS

January 5-12, 1986
New Perspectives in Dental Restorations, Presented by the Office of Institutional Development, Faculty: Dr. David Koth, Chairman, Department of Fixed Prosthodontics, and Dr. Theodore Roberson, Chairman, Department of Operative Dentistry, Location: Cruise to U.S. Virgin Islands, Cost: Continuing Education - $200.00 per person, Cruise - approximately $1100.00 plus airfare to Miami, Credit: 20 hours, Synopsis: Details will be provided at a later date. A spouse program will be provided.

February 8-15, 1986
Swiss-Ski and C.E., Presented by the Office of Institutional Development, Faculty: From University of Zurich, Cost: Approximately $1225.00 per person for travel (from New York), transfers and accommodations, $200.00 for Continuing Education and $75.00 for lift tickets, Credit: 20 hours, Synopsis: Programs will be presented by faculty from the University of Zurich for approximately 2 hours each morning and 2 hours each evening. More details on the program will be available at a later date.

Cost will cover air fare from New York City round trip to Zurich, transfer from Zurich to St. Moritz, accommodations at the Crystal Hotel for 6 nights, continental breakfast each morning, dinner each evening, welcome wine and cheese gathering, farewell banquet, portage, luggage, all tax and service. The optional 6 day ski pass is available for 185 Swiss francs (approximately $75.00).

SPECIAL NOTICE

Oral Diagnosis and Disease Prevention Mini-Residency, Faculty of the Department of Oral Diagnosis, Beginning Dates: September 6, September 20, October 4, October 18, November 1, October 15, 1985, Cost: negotiable, Credit: contracted, Synopsis: This personalized educational experience is flexible, personal, concentrated and self-directed. The purpose of this program is to meet the need of dental professionals who desire more than a superficial learning experience or who have limited access to other forms of continuing education. This exceptional program is an individualized learning experience developed for you according to your needs. Objectives are contracted to reflect your desire for in-depth and/or wide-range study in Oral Diagnosis and Disease Prevention. For more information, please contact the Department of Oral Diagnosis, School of Dentistry 209H, The University of North Carolina, Chapel Hill, N.C. 27514. (919)966-2746.

APPLICATION FORM

Please enroll me in the following course(s):

	Course Title		Course Date	Registration Fee	Amount Enclosed
1)	_____	on	_____	_____	_____
2)	_____	on	_____	_____	_____

Name _____ SS# _____ Street _____

City _____ State _____ Zip _____ Office Phone _____ Occupation _____

List any other personnel attending (if in addition to participant above) and give course date:

1) _____ SS# _____ on _____ Fee _____ Occupation _____

2) _____ SS# _____ on _____ Fee _____ Occupation _____

3) _____ SS# _____ on _____ Fee _____ Occupation _____

{Make checks payable to the UNC School of Dentistry and mail to Continuing Dental Education, 410 Brauer Hall 209H, School of Dentistry, Chapel Hill, NC 27514, or call 919/966-2729 (outside NC) or 800/722-1355 (NC only) for further information.}

AHEC Notes

AHEC Continuing Education Completes Year of Record Expansion

In June of 1984, the responsibilities for AHEC continuing education were added to the Office of Institutional and Professional Relations (now Institutional Development). A clear mandate was received from the Dean of the UNC School of Dentistry to expand the level of AHEC continuing education activities and to thoroughly integrate these activities into the ten departments of the school.

The success of this expansion is best portrayed by the number of courses offered. During 1983-84, a total of 28 courses were conducted by the UNC School of Dentistry faculty as a part of the AHEC Continuing Education Program. During 1984-85, 103 courses were conducted. All ten of the departments of the School were involved in these programs and 52 different faculty participated in this expanded continuing education effort.

Each of the nine AHECs offered at least one continuing education course in cooperation with the School of Dentistry and in several AHECs the number exceeded ten. Twenty-five dental societies received speakers from the UNC School of Dentistry through a new program to provide two speakers per society each year. These were requested through the local AHEC of the AHEC Office at the UNC School of Dentistry.

The AHEC dental coordinators and local dental societies have been very positive in their response to this expanded program. An informal assessment after the first year indicates a tremendous success with great promise for the future.

—Darlene Sams,
AHEC Coordinator
UNC School of Dentistry

AHEC/UNC School of Dentistry Courses

September 1985

"Consumer Radiology for Dental Auxiliaries"
Ms. Pam Klute
Dental Assisting
September 6, 1985
1-5 pm, Winston-Salem
Northwest AHEC

"Rubber Dam Placement'
Faculty: Linda Stewart
Operative
September 12, 1985
1-8 pm, AB Tech
Mountain AHEC

"Sealant Application"
Faculty: Pediatric Dentistry Faculty
Pediatric Dentistry Department
September 13, 1985
9 am - 5 pm, AB Tech
Mountain AHEC

"Marketing Dentistry"
Ms. Darlene Sams & Dr. Bill Milner
Administration
September 13, 1985
½ day, CAHEC Building
Charlotte AHEC

"Dentistry-Pharmacy Relations"
Dr. Jeff Burkes
Oral Diagnosis
September 26, 1985
6:30-9:30, Cape Fear Valley
Med Cntr, Fayetteville AHEC

"Esthetic Bonding"
Dr. Harald Heymann
Operative
September 27, 1985
2:30-4:15 pm, Asheville
Mountain AHEC

October 1985

"Squamous Cell Carcinoma in the Oral Cavity"
Faculty: TBA
October 4, 1985
3-5 pm, FAHEC Building
Fayetteville AHEC

"Maxillofacial Pain Syndromes"
Dr. Jeff Burkes
Oral Diagnosis
October 23, 1985
4-9 pm, MAHEC
Mountain AHEC

"Forensic Dentistry"
Dr. William Webster
Dental Ecology
October 24, 1985
7-9 pm, Lenoir County Dental Auxiliary Study Club
Eastern AHEC

"Current Concepts in Perio"
Dr. John Moriarty
Periodontics
October 25, 1985
1-5 pm, Hickory
Northwest AHEC

DF Happenings

DENTAL FOUNDATION HIGHLIGHTS

UNC School of Dentistry to Manage $8.7 Million Program to Assist U.S. Dental Education in Transition Period

The School of Dentistry of the University of North Carolina at Chapel Hill has recently been designated to manage a five-year, $8.7 million program to help U.S. dental schools maintain the quality of their research, patient care, and service activities in a time of declining student enrollment. The effort is being funded by The Pew Memorial Trust of Philadelphia. The Dental Foundation of North Carolina is the official recipient of the grant.

In two phases The Pew National Dental Education Program will work with selected dental schools in planning and implementing institutional changes that will respond to the drop in demand for dental education while preserving the national resource the schools represent. Ben D. Barker, Dean and Co-Director of the Program, said the program's goal is important because the contributions dental schools make to society are so varied. "In addition to training new practitioners," Barker said, "these schools represent a rich resource for biomedical research, patient care and the retraining of dentists and physicians. The nation cannot afford to have this resource jeopardized by the serious institutional displacement which has occurred over the past five years."

Enrollment of first-year students in dental schools has dropped from 6,301 in 1978 to 5,043 last fall (1984). For the 60 U.S. schools to absorb the decline, the equivalent of 13 of those institutions would be forced to close.

In the years following World War II, the United States built a sophisticated complex of biomedical and health sciences institutions second to none in the world. Riding a crest of increasing demand for health care and health care providers, these institutions not only grew in quality, but they made dramatic increases in size and capacity for the training of health care professionals. Demographic patterns and disease trends have changed; however, the costs for health care and professional training have risen. The demand for new health care professionals has lessened, forcing accommodation on the part of dental, medical, and nursing schools. It is important that this transition not serve to deteriorate the quality of research, patient care, and service programs conducted by the nation's various health professional schools.

In the first phase of the program, as many as 20 dental schools will be selected for grants of up to $100,000 each. The funds will be used to focus leadership attention on the areas of needed change and to support development of comprehensive institutional planning efforts. In the second phase, seven schools will be selected and awarded up to $1 million each to carry out major institutional changes.

Dr. Edward O'Neil, Program Co-Director and Assistant Dean, said the program would provide "resources for innovation that are most critically needed for survival" at a time when many institutions face large reductions in budget and support. "The program is designed to develop transferable models for downsizing institutions," he said, "without losing their vitality or ability to respond to needs beyond undergraduate dental education." O'Neil said the work of the Program also should be applicable to the other health professions. "Dentistry and dental education provide an excellent opportunity," he said, "for a small number of institutions to establish models for redirecting institutional programming and resources to respond to changing needs faced by both the profession and our society in general."

The First Annual R. J. Shankle Lecture

Dr. Shankle

The Shankle Fellowship was created by both the Tarheel Endodontic Association and many general practitioners from across the state and Southeast to recognize Dr. Robert Jack Shankle for the contributions "he has made to the lives of professionals and health care providers."

Dr. Gunnar Bergenholtz, Chairman, Department of Endodontics at the UNC School of Dentistry, has organized the Shankle Fellowship as a series of lectures designed to bring the best scientific and clinical personalities to the Chapel Hill campus to share their knowledge with the profession and education community in the state. This commitment to the improvement of the entire profession is reflective of the spirit in which Dr. Shankle approached his professional career.

The First Annual R. J. Shankle Lecture was recently held at the Hotel Europa in Chapel Hill. Dr. David H. Pashley, Professor of Oral Biology and Physiology at the Medical College of Georgia, presented a lecture entitled "Microleakage-Dentin Permeability-Microleakage". Dr. Pashley is internationally renowned for his research on the physiology of dentin. His research has greatly impacted dentists' current understanding of the reaction patterns in dentin and pulp following dental treatment. Dr. Pashley's lecture was clinically oriented and addressed some of our every-day clinical problems.

Dr. Shankle has been a major contributor to the life of the UNC School of Dentistry, the education of the generations of dental students who have passed through the school, and the leadership of the dental profession of the State of North Carolina.

Dr. Shankle was responsible for the organization of the Department of Endodontics and the establishment of the graduate specialty program in Endodontics. He has also served as Editor and Publisher for the *Journal of the North Carolina Dental Society*, Director of Public Relations and Development of the School of Dentistry, leader in the UNC Dental Alumni Association, and President of the North Carolina Dental Society. In each of these roles Dr. Shankle's contributions have been marked by his diligent work and commitment to the dental profession.

Oldenburg Honored

Dr. Oldenburg

Retiring Department of Pediatric Dentistry (formerly the Department of Pedodontics) Chairman Ted Oldenburg was recently honored at special activities held in his honor at the Five Oaks Country Club in Durham.

Honoring Oldenburg was the North Carolina Society of Pediatric Dentistry, the UNC Pedodontic Alumni Association, the Department of Pediatric Dentistry at the UNC School of Dentistry, and friends.

Dr. Oldenburg has served for 15 years as Chairman of the Department of Pedodontics at the School. To properly salute Oldenburg for his distinguished career in teaching and service to his institution, his patients, and the Academy, the University of North Carolina Pedodontic Alumni Association has established a fund through the Dental Foundation of North Carolina, Inc. in Oldenburg's name. The purpose of this fund is to create an endowment to support the Pedodontic Graduate Program at the School. Specifically, income from the fund will complement graduate student stipends, support research and travel, provide additional resources enabling the program to recruit graduate students, and provide students with the highest quality graduate training possible.

Working on this Committee to honor Oldenburg in this manner were Dr. Eugene Howden of Chapel Hill, Dr. James B. Congleton of New Bern, Dr. Gary Hill of Durham, and Dr. William F. Vann of Chapel Hill.

The Oldenburgs went to the University of Zurich in July where Dr. Oldenburg will be involved in biomaterials research for a sabbatical year before returning to Chapel Hill to rejoin the Pediatric faculty.

Wood Presented Hunt Award

Dr. Wood

Dr. Matthew T. Wood, Class of 1958, Professor and Chairman, Department of Removable Prosthodontics at the UNC School of Dentistry has received the School's Richard F. Hunt Memorial Award for excellence in undergraduate teaching.

The award was presented by Dean Ben D. Barker at the School's recent Spurgeon Awards Banquet.

The Richard F. Hunt Memorial Award is awarded for significant contributions to excellence in undergraduate teaching. It is sponsored by the Loblolly Study Club of Rocky Mount in memory of its founder, Richard F. Hunt, a 1955 graduate of the UNC School of Dentistry. The first award was presented in 1969.

While the recipient may be recognized for the quality of teaching service over a period of years, it is basically intended to recognize contributions during the year under review. Those honored have demonstrated "knowledge of subject matter, interest in students, a positive attitude toward work and scholarship and, above all, truth."

Wood is a native of Enfield. He received his undergraduate degree from the University of North Carolina at Chapel Hill prior to entering dental school. He is an active supporter and leader in the Delta Sigma Delta Dental Fraternity. He is a Past President of the UNC Dental Alumni Association and continues to assist this organization with its fall activities each year.

Phone Power 1985 Concludes 1984-85 Membership Campaign

The Dental Foundation of North Carolina recently held its final activity for the 1984-85 campaign through the use of telephones. Approximately 1100 telephone calls were completed by twenty-five student callers.

Dr. Jim Elliott, Annual Giving Chairman and the class and district agents are to be commended for their dedicated work for this campaign. Although final figures are not ready, the latest tally shows the number of contributors has increased for the year. A detailed report will be provided in the next few months.

Dr. Chan Chandler ('70) of Winston-Salem has agreed to serve as Chairman of the Annual Giving Committee for 1985-86.

The Annual Business Meeting of the Dental Foundation will be held Thursday, December 5, 1985 in Chapel Hill at the conclusion of the scheduled Board of Director's Meeting. This change in meeting date is the result of an approved change in the Constitution and By-Laws voted on by the Board at their May meeting held in Pinehurst.

Dental Seminar Day is scheduled Friday, December 6. The Annual Dental Foundation Membership Luncheon will be held on this date at the Carolina Inn.

Dental Foundation Developing Business Program

Dr. Baxter B. Sapp, President of the Dental Foundation, has initiated work on his 1985 goal for the organization. Recently Drs. Sapp and O'Neil, and Dean Barker met with representatives from IBM and Northern Telecom to discuss the importance of oral health to the well-being of North Carolinians.

In this meeting, the importance of promoting dental care was discussed. Items mentioned were:

- Developing short articles on dental health to be incorporated into in-house staff publication of businesses.
- Providing consultation services on dental benefits packages as well as alternatives such as self-insurance and direct reimbursement plans.
- Providing consultation services related to claims reviews.
- Providing an orientation brochure for new employees to the region on how to go about selecting a dentist.
- Distributing the *North Carolina Dental Review* to the appropriate individual in personnel who is concerned about health promotion and disease prevention.
- Providing contractual services for the development of onsite prevention program at the company.
- Developing education programs for benefits managers in topics related to dental insurance, insurance, and direct reimbursement.
- Developing an attractive brochure to provide dental information to other businesses around the state.

This program will not only benefit dentistry in North Carolina but also surrounding states where companies contacted operate. As more information is gathered, it will be shared with the membership of the Dental Foundation.

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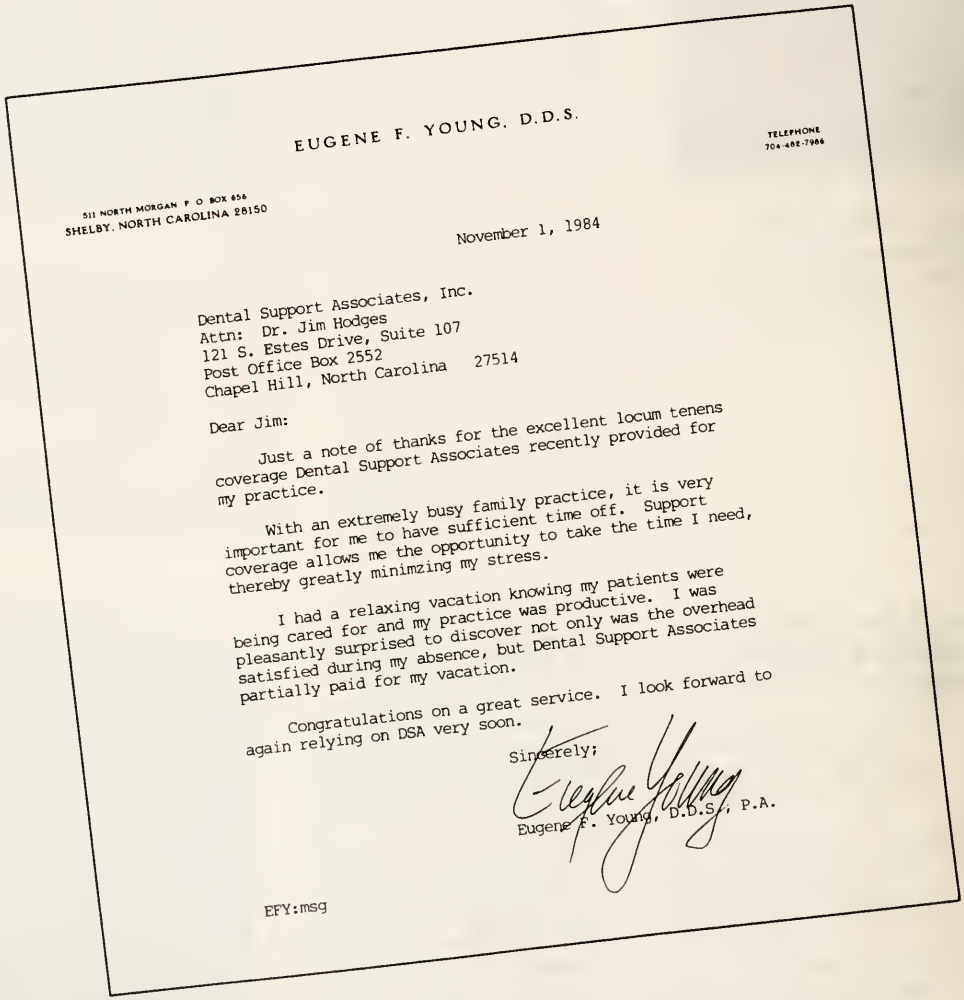

EUGENE F. YOUNG, D.D.S.

TELEPHONE
704-482-7986

511 NORTH MORGAN P O BOX 656
SHELBY, NORTH CAROLINA 28150

November 1, 1984

Dental Support Associates, Inc.
Attn: Dr. Jim Hodges
121 S. Estes Drive, Suite 107
Post Office Box 2552
Chapel Hill, North Carolina 27514

Dear Jim:

Just a note of thanks for the excellent locum tenens coverage Dental Support Associates recently provided for my practice.

With an extremely busy family practice, it is very important for me to have sufficient time off. Support coverage allows me the opportunity to take the time I need, thereby greatly minimzing my stress.

I had a relaxing vacation knowing my patients were being cared for and my practice was productive. I was pleasantly surprised to discover not only was the overhead satisfied during my absence, but Dental Support Associates partially paid for my vacation.

Congratulations on a great service. I look forward to again relying on DSA very soon.

Sincerely;

Eugene F. Young, D.D.S., P.A.

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J.M. Hodges, Jr., D.D.S., 121 S. Estes Dr., P.O. Box 2552, Chapel Hill, NC 27514
(919) 968-8483

Brauer Hall

Pediatric Chairman Named

Dr. Vann

After a broad search for a successor to Dr. Ted Oldenburg, the UNC School of Dentistry is pleased to announce the appointment of Dr. William F. Vann, Jr. as Chairman of the Department of Pediatric Dentistry at the University of North Carolina at Chapel Hill School of Dentistry.

Dr. Vann, a native of Alabama, received his D.M.D. degree from the University of Alabama, and his M.S. in Periodontics and Ph.D. in Higher Education at the University of North Carolina at Chapel Hill.

Dr. Vann joined the UNC faculty in the Department of Pediatric Dentistry in 1976. He is the recipient of several honors and awards including the John Motley Morehead Fellowship, Outstanding Young Men in America, Who's Who in American Colleges and Universities, and Teaching Excellence Awards.

His professional activities include serving as Secretary/Treasurer for the North Carolina Society of Pediatric Dentistry, member of the Curriculum Revision Steering Committee, Chairman of the Clinical Sciences Revision Subcommittee, member of the Board of Directors for the American Association of Pediatric Dentistry among many others on a local, state and national level. Dr. Vann has presented numerous continuing education programs and is the author of a number of journal articles, abstracts, and self-instructional units and course syllabi. His major research interests are biomaterials and educational research.

The change in the name of the Department of Pedodontics to the Department of Pediatric Dentistry reflects a change in the orientation of services for children emphasizing a wider range of collaboration with health care providers and institutions.

General Practice Mini-Residency Begun

The UNC School of Dentistry has begun a general practice mini-residency program for students. Participants in this program are students who have completed all or most of their graduation requirements. Dental Assisting support is provided by the Assistants to the DAU Clinic and from various departments in the School. A dental hygienist provides services one day a week. Mr. Don Comptom is practice manager; Dr. Dan Shugars is consultant; and Dr. Charles Milone is director.

Residents under the supervision of the attendings provide comprehensive general dental services. Each resident treats his or her own family of patients. Resources for patients are 1) student's previous family of patients, 2) unassigned patients; and 3) patients who are recruited. Patients are being recruited from among residents' friends, dental students, staff, other health services' staff, and University students. The patient load is being monitored to provide an adequate but not overwhelming supply of patients.

The purpose of the practice is to provide the residents experience as similar to private practice as possible. Opening the practice requires many of the same kinds of decisions as opening a private practice—planning, organizing, staffing, supplying, furnishing, implementing, and finally evaluating. Providing services under generalist supervision should enable residents to synthesize their dental education into dental practice. The graduate fee schedule provides a transitional level between student clinic fees and private practice fees. This fee schedule should provide a more realistic basis for relating to patients than does the student clinic fee schedule. The practice should simulate private practice as nearly as possible.

The experience gained in this pilot program should prove invaluable in further educational efforts. Enrichment experiences can be provided for seniors who have completed their graduation requirements. Training of dental students and dental hygiene students can be coordinated. Graduates who go directly into private solo practice now need as realistic experience as possible in dental school. This practice is designed to provide that.

—Dr. Charles Milone

Please Send Extracted Teeth!

One aspect of our School of Dentistry's quality training programs is that of teaching pre-clinical Operative Dentistry on natural tooth dentoforms. As many of you know these dentoforms are handmade in the UNC School of Dentistry from extracted natural teeth contributed by our alumni and friends in private practice. This year, as in previous years, your support is solicited in saving your patients' extracted natural teeth and mailing them to us in jars that we will provide.

To have an empty jar (complete with preserving solution and a return mailing package) mailed to you, send a postcard to:

Dr. Harald O. Heymann
Department of Operative Dentistry
UNC School of Dentistry (211H)
Chapel Hill, North Carolina 27514

All we ask is that you pay the return postage. When you return your filled jar to us, an empty one with preservatives and return mailer will be mailed back to you to be filled again.

Our School is convinced of the importance of the natural dentoform in our D.D.S. and Dental Hygiene curricula. However, the natural tooth dentoforms' use is dependent on the continued support of our School's alumni and friends in private practice.

Please send your postcard soon. We need teeth NOW!

—Harald O. Heymann, D.D.S.
John D. Jordan, C.D.T.
Natural Tooth Dentoform Project
Department of Operative Dentistry

UNC Lab Service to Detect Periodontal Pathogens

One or more universities are offering laboratory diagnostic services for detecting *Actinobacilus, Bacteroides, Fusobacterium,* and *Haemophilus* species believed to be associated as pathogens with chronic refractile or rapidly progressive periodontal disease, or juvenile periodontitis. If you are interested in such services from the University of North Carolina, please contact the staff in the Oral Microbiology Laboratory at the UNC School of Dentistry, (919)966-1651.

United Cerebral Palsy Award Presented

The United Cerebral Palsy Research and Education Foundation has awarded a clinical fellowship in Pediatric Dentistry to Dr. John R. Chistensen and Dr. Phillip R. Parker who received special training in Pedodontics relating to developmental disabilities. Drs. Parker and Christensen worked under the direction of Dr. Theodore R. Oldenburg, Department of Pediatric Dentistry, at the UNC-CH School of Dentistry for one year each.

The fellowship is approved by the Board of Directors of the United Cerebral Palsy Research and Educational Foundation in support of professional training for physicians, dentists, therapists, and other care personnel working with disabled children, and adults.

Cerebral Palsy is a condition that results when the supply of oxygen to the brain is interrupted, causing damage to the brain and central nervous system. It usually occurs at or around the time of birth or at some time during the fetal period, though it may also occur later in childhood as the result of injury.

It is estimated that at the present time about 700,000 children and adults in the United States have Cerebral Palsy and that the number of infants born with the condition each year approximates 10,000.

American Association of Women Dentists NC Chapter Formed

Over the past ten years, North Carolina has experienced a steady increase in its number of women dental students and dental practitioners. The Office of Predoctoral Education at the UNC School of Dentistry reports the female dental student enrollment at UNC has grown from 9% (1974) of the total dental student enrollment to 25% in 1984. To address the growing needs and concerns of women dentists, specifically in North Carolina, students at the UNC School of Dentistry have recently organized the North Carolina Chapter of the American Association of Women Dentists. Membership is available for all North Carolina dentists and dental students of both sexes.

The American Association of Women Dentists (A.A.W.D.) is the only nationally recognized association which represents the American woman dentist. Since its establishment in 1921, the society's general purpose has been to aid in the advancement of women in dentistry. This objective has been advanced primarily through the publication of a newsletter–*The Chronicle*, organization of scientific meetings, and liaison with other national dental groups such as the American Dental Association. In addition, A.A.W.D. also offers financial assistance and sponsors the Colgate-Palmolive Research Award, and the Outstanding Senior Woman Dental Student Award to select dental students. Finally, A.A.W.D. affords women dental students and practitioners the opportunity to become more professionally involved with other women in dentistry on a national level.

The North Carolina Chapter shares the concerns of the national group by encouraging women in the pursuit of a dental career and by helping women become a more vital force in dentistry. The Chapter feels that fellowship–the exchange among peers, the sharing of professional goals, and the interaction between North Carolina dental practitioners and students–is valuable to the continued success of dentistry in North Carolina.

A diverse group, both male and female dental students, UNC School of Dentistry faculty, and private practitioners have participated in the State Chapter programs. Recent programs include Dr. Sharon Turner who discussed "Combining A Dental Career With Family", Dr. Bettie McKaig who discussed "Women in Private Dental Practice", and Linda Stewart who discussed "Putting Teamwork into Practice". Future programs include a talk with resident psychologists concerning problems encountered in dual career families, a discussion with local bankers on financing and investment options for dentists, and a professional image consultation workshop.

The North Carolina Chapter of A.A.W.D. welcomes dentists and dental students to attend their functions. For information, contact the North Carolina President, Toni Powell at 919/544-6200 or the Membership Chairman, Jan Tardell, Class of 1986, UNC School of Dentistry (209H), Chapel Hill, North Carolina 27514, 919/933-6685.

–Celeste Hunter ('87)

Faculty Updates

Ikramuddin Aukhil (Periodontics) has recently completed a two-year N.I.D.R. supported study on recurrent periodontal disease in animal models.

Kenneth G. Auman ('84) of Lexington has been appointed at the rank of Part-time Clinical Instructor in the Department of Fixed Prosthodontics for 1985-1986.

James D. Bader has been appointed at the rank of Research Associate Professor in the Department of Dental Ecology effective July 1, 1985.

George W. Greco (Periodontics) offered a number of scientific presentations during Winter/Spring 1985 in Greenville; Elkin; Fort Bragg; Jackson, SC; and Washington, DC.

James B. Hancock ('65) of Fayetteville has been appointed at the rank of Part-time Clinical Instructor in the Department of Fixed Prosthodontics for 1985-1986.

Harald Heymann (Operative Dentistry) ('78) recently presented a continuing dental education program entitled "Update of Anterior Esthetic Materials and Techniques" to the Academy for Excellence in Dentistry. He also presented a program entitled "Current Concepts in Veneering Techniques" to the Randolph County Dental Society.

L. H. Hutchens, Jr. (Periodontics) ('67) participated in the American Board of Periodontology Preparation Course at Louisiana State University as a teacher-examiner. He was the featured clinician at the North Carolina Society of Periodontists' Winter Meeting in Raleigh and was recently a recipient of a Veterans Administration Grant to histologically evaluate molar functions. Also included as co-investigators were Drs. **John Moriarty** (Periodontics) ('75) and Larry Scheitler, Adjunct Professor of Periodontics.

Leonard G. Jewson (Periodontics) was recently installed as President of the North Carolina Society of Periodontists and serves as Chairman of the Professional Education Committee of the Chapel Hill Chapter of the American Cancer Society.

Walter T. McFall, Jr. (Periodontics) ('58) recently attended the meeting of the Committee on Glossary of Periodontal Terms in Dallas, Texas and the Executive Council Meeting of the American Academy of Periodontology in Chicago. He has received a grant from the J.O. Butler Company to investigate a new dentifrice for sensitive teeth.

Edward H. O'Neil has recently been appointed Assistant Dean and Director of Institutional Development. O'Neil joined the School in July 1983 as Director of the newly created office, Institutional and Professional Relations, which houses the offices of continuing dental education; public relations; Dental Foundation of N.C., Inc.; UNC Dental Alumni Association; Area Health Education Center; and UNC Dental Parents.

Pediatric Dentistry faculty have been active in research, and it resulted in numerous papers being presented at the IADR Meeting in Las Vegas. Listed below are the faculty and the paper tiles: **Pamela K. DenBesten** (Pedo '84), "Effects of Fluoride on Ameloblast Modulation"; **Miles A. Crenshaw,** "The Development of the Surface-Inward Fluoride Gradient in Forming Enamel"; **William F. Vann, Jr.** (Pedo '76), "Quantitative Wear Assessments for Resin Restorations in Primary Molars"; **Diane Dilley,** "Time Required for Placement of Alloy Versus Resin Posterior Restorations"; **Theodore R. Oldenburg** ('57), "Composite Restorations for Primary Molars: Two Year Results"; **Tom G. Deaton,** "PTH, CT and D Metabolite Effects on Ca Transport in Maturation Enamel Organ"; and **D. A. Timko,** "Effect of F- on Ca Uptake in Developing Enamel".

Donna Poteat Warren, Clinical Instructor, Department of Dental Ecology, was recently presented the Distinguished Alumni Award by the UNC Dental Hygiene Alumni Association and was honored at their annual luncheon. This award is presented to an outstanding alumnus who has made significant contributions to the profession of dental hygiene.

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Alumni Notes

Schupper Honored by the UNC Dental Alumni Association

Honorary Membership in the UNC Dental Alumni Association is awarded to individuals who have proven themselves worthy of recognition because of their contributions to dentistry, their community, and their fellowman. This membership classification is limited to non-UNC Dental Alumni.

The 1985 recipient joins the ranks of 8 dentists and the Keiter Dog as an Honorary Member. Dr. Nathan Schupper of Durham is a special individual. He has served the UNC School of Dentistry for the past 22 years. During this more than two decades of service he has taught at every level of instruction carried out by the School of Dentistry including undergraduate preclinical, undergraduate clinical, graduate seminars, and graduate clinical. On several occasions he has been recognized and honored by students' groups for his commitment to teaching excellence. Though retired from the Veterans Administration and unable to receive compensation for his teaching, Dr. Nathan Schupper continues to serve the Department of Removable Prosthodontics and the UNC School of Dentistry in the clinic and the classroom

In this small way, the UNC Dental Alumni Association thanks Dr. Schupper for his support to the University of North Carolina at Chapel Hill, its School of Dentistry, and its students and its alumni as well as the practicing dentists of North Carolina.

Sturdevant Receives Brauer Award

Dr. Sturdevant

The UNC Dental Alumni Association is pleased to announce the addition of a new award, the *John C. Brauer Award*. This award is named for the first dean of the UNC School of Dentistry. It recognizes outstanding service to the UNC School of Dentistry. Eligible candidates include senior faculty and administrators of the School, Alumni, non-UNC dentists, or other individuals who have made an outstanding contribution to the UNC School of Dentistry. The award is directed towards recognition of a life-time of service rather than one particular activity or specific contribution. This award may be made annually.

The 1985 recipient of the *John C. Brauer Award* is Dr. Clifford Max Sturdevant, Professor Emeritus of the UNC School of Dentistry. Dr. Sturdevant is former Chairman of the Department of Operative Dentistry as well as one of the first faculty members in the UNC School of Dentistry. "Dr. Cliff", as he has come to be known, distinguished himself in many activities other than the formation of the School. He was involved in one of the earliest research efforts investigating dental materials and casting techniques with a grant from the U.S. Bureau of Standards. The use of rubber-base impression materials was made practical by his design of a special syringe in 1958 with Dr. Roger Barton. His contributions to restorative dentistry will never be forgotten.

UNC Dental Alumni Association Elects New Officers

During the recent Dental Alumni Day activities, Dr. Carroll Kennedy ('59) of Chapel Hill was elected President of the 2,000 member organization. Kennedy was presented the President's gavel by outgoing President Lloyd Rothschild ('75) of Raleigh during special activities at the Carolina Inn.

Elected Vice-President (President-Elect) was Dr. James Elliott ('68) of Asheville. Dr. Keith Bentley ('60) of North Wilkesboro was elected Secretary-Treasurer.

District directors elected to represent the North Carolina dental districts on the Board of Directors for a three year term were: 1st District, Dr. Lena F. Eldridge ('81) of Hickory; 2nd District, Dr. Gary Sugg ('75) of Charlotte; 3rd District, Dr. Michael White ('75) of Rockingham; 4th District, Dr. Larry Williams ('66) of Benson; and 5th District, Dr. Charles Biggerstaff ('74) of Wilmington.

Elected to represent out-of-state alumni on the Board of Directors was Dr. Everette (Pete) Crotts ('65) of Charleston, SC.

The first meeting for the 1985-86 year was scheduled Saturday, August 3 in Chapel Hill at the UNC School of Dentistry at 9:00 a.m.

UNC General Alumni Association Elects Harrell President-Elect

In recent alumni elections, Dr. James A. Harrell, Sr. of Elkin was elected President-Elect of the UNC General Alumni Association. Harrell received his undergraduate degree from UNC.

Harrell is no stranger to positions such as this one. He has served as President of many organizations including the North Carolina Dental Society and the Academy of General Dentistry.

Are You Ready for the 1985 Football Day?

The UNC School of Dentistry has scheduled its 1985 Annual Fall Football Day on Saturday, October 12 when UNC meets Wake Forest in Kenan Stadium.

The fun begins at 8:30 a.m. on the patio of Brauer Hall. A special continuing dental education will begin at 9:00 a.m. featuring Dr. Jack Shankle who will discuss "How To Approach Endodontic Treatment".

Immediately following this special program, everyone will participate in the Annual Fall Luncheon prior to the kickoff of the football game.

To register, complete the form below and return to the UNC Dental Alumni Association, UNC School of Dentistry 209H, Chapel Hill, North Carolina 27514 or telephone 800-722-1355 (NC only) or 919/966-4563 (outside NC).

Name _____

Address _____

_____

Telephone Number (_____) _____

____ Please reserve ____ tickets to the UNC Fall Football Day and Game on October 12, 1985 at $23.00 for each adult or $20.00 for each child under 12. Enclosed please find my check made payable to the *UNC Dental Alumni Association*.

____ Please reserve ____ tickets to the UNC Fall Football Day Luncheon on October 12, 1985 at $10.00 for each adult or $7.00 for each child under 12. Enclosed please find my check made payable to the *UNC Dental Alumni Association*.

____ Please send me additional information on other fall activities/games scheduled this year.

____ I am interested in ____ tickets to the UNC football game scheduled:

_____

(list date of home game or team).

Continued from page 15

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24. Shanley, D. (ed.). Efficacy of treatment procedures in periodontics. Proceedings of a workshop held at Trinity College, Dublin, Ireland. December 12-14, 1979. Chicago, Quintessence, 1980.
25. Simpson, D. M. Current concepts of the etiology and pathogenesis of periodontal disease. *The NC Dent Rev.* 3(1):6-11, 1985.
26. Waerhaug, J. A. Epidemiology of periodontal disease–review of literature, p. 181-211. In Ramfjord, S. P., Kerr, D. A. and Ash, M. M. (eds.). World workshop in periodontics, 1966, Ann Arbor, Michigan, June 6-9, 1966. The University of Michigan, Ann Arbor, 1966.
27. WHO. Epidemiology, etiology and prevention of periodontal disease, Geneva, WHO, 1978. Technical Report Ser. 621.

Alumni Notes

Don L. Allen ('59), Dean of the University of Texas Dental Branch at Houston, has been named the recipient of the 1985 Distinguished Alumni Award from Elon College. Allen attended Elon from 1952-1955, completing requirements for admission into dental school. He has held a wide variety and number of consultantships and professional appointments, including serving on American Dental Association committees and as President of the American Association of Dental Schools and the International College of Dentists. Dr. Allen is former Dean of the University of Florida College of Dentistry. He has also presented papers at dental meetings in Iran, Egypt, Finland, Guatemala, and Mexico as well as many states, and has published a number of articles involving periodontology and dental education.

Jerry Butler ('72) has recently opened an Arby's franchise in Boone because of the good changes he has seen that chain make in the last several years.

John Chandler's ('67) model of the Elizabeth II, a representative 16th century sailing vessel of the Roanoke Voyages, has been accepted by the Friends of Elizabeth II and the N.C. Department of Cultural Resources as a part of the displays commemorating the first attempts to settle North America 400 years ago. Chandler began the arduous task of creating in miniature the 50-ton, three-masted merchant ship a year ago and devoted 300-400 hours to capturing every minute detail of the representative merchant ship built in Manteo's harbor for North Carolina's 400th Anniversary celebration. The model will be housed at the Visitor's Center about 50 yards from Manteo's waterfront. From time to time, the model will travel around the state to be viewed by landlocked Tar Heels. In March, it joined the John White drawings as part of the N.C. Department of History's 400th Anniversary display at Raleigh. Dr. Chandler has recently acquired a food manufacturing company, Chandler Foods, Inc. which has distribution in seven states.

Jasper H. Chesson ('63) of Rocky Mount has been elected President of the N.C. Association of Orthodontists. Other officers are Dr. **Saunders W. Moore** ('58) of Burlington, President-Elect; Dr. **W. Alex Willis** ('62) of Jacksonville, Secretary-Treasurer; and Dr. **Frederick G. Hasty** ('58) of Fayetteville, trustee to the Southern Society of Orthodontists.

Dr. Clark

Jerry Clark ('69) of Greensboro recently presented a lecture, "Orthodontic Pearls", to the St. Louis Foundation Meeting at St. Louis University, the University of the Pacific, and at the Columbia University Orthodontic Alumni Meeting in New York.

Randy Cline ('79) has relocated his dental practice to Charlotte in association with Dr. Paul Homoly. He is practicing implant and general dentistry.

Bobby M. Collins, II ('83) of Fort Bragg presented a table clinic at the Thomas P. Hinman Meeting entitled "Mandibular Block Anesthesia: A Technique Comparison".

Jay J. Coyle ('84) has opened a general family practice of dentistry in Albemarle.

Everette (Pete) Crotts ('65) of Charleston, SC has been elected Vice-President of Coastal District Dental Society of South Carolina for 1985-1986.

Curtiss W. Daughtry ('61) (Ortho '68) of Florence, SC was recently elected Pee Dee District Dentist for 1985. He is a trustee for the Southern Society of Orthodontists and Commissioner for Florence City-County Airport.

John Dunn ('64) of Charlotte has recently won three awards for his roses at the National Rose Convention held in Pittsburgh.

James C. Elliott ('68) of Asheville is President-Elect of the First District Dental Society.

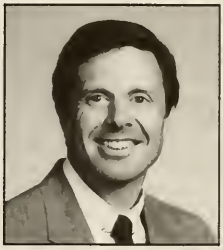
John M. Fish ('82) of Hildebran has recently attended a seminar presented by Dr. Peter Dawson, "The Concept of Complete Dentistry". Dr. Fish reports "Dr. Dawson's seminar is an excellent detailed discussion of TMJ, occlusion, and full mouth restorative dentistry".

IN MEMORY

DR. JAMES ALEXANDER FOUST, JR.

CLASS OF 1954

1919 - 1985



Dr. Fry

Robert Fry ('77 Ortho) was recently elected Vice-President of the Kansas Dental Association. Dr. Fry graduated Cum Laude from Graceland College in Lamoni, Iowa and attended the University of Missouri at Kansas City School of Dentistry. Some of Dr. Fry's previous accomplishments include past Treasurer of the Kansas Dental Association and being named to Leadership Kansas, Outstanding Young Man of America, and Who's Who in the Midwest. Dr. Fry practices in Overland Park, Kansas.

Bernard C. Harris ('57) of Shelby has been appointed to the local Board of Directors of First Citizens Bank.

Larry Hemby ('75) believes dentists are becoming less feared because they are becoming aware of patients' fears. In a recent article in the Southport newspaper, Hemby discussed present day dentistry and indicated he believes it is something to smile about. He indicated because preventing a dental problem is better than treating one, he believes people are more aware about caring for themselves, and as a result are becoming healthier and happier.

John Rob Holland ('74) is known for his animated robots. When he was a student, one of his professors assigned everyone the task of preparing a lecture, complete with audio-visual support materials. While most of his classmates dutifully put together the standard slide/chart presentation, he turned his lecture on preventive dentistry over to "Sally", a homemade, lifelike robot whose speech, facial expressions and gestures delighted the class and won high marks for her creator. Little did Dr. Holland realize, however, that Sally's maiden speech would also set the stage for a successful dual career as private practitioner and animated robotics entrepreneur. He founded the company, Sally Industries, in 1977, and its first character was a female robot named after his initial creation. Today the company produces a wide range of human, animal, and fantasy characters programmed to educate and entertain. One of the products resulting from his dental experiences is none other than the Tooth Fairy herself. At first glance, the product looks like an ordinary mirror. However, when a hidden control button is pushed the Tooth Fairy suddenly appears and proceeds to tell children and parents alike how to properly brush their teeth, offers tips on nutrition, etc. A variety of canned tapes can be used to relay various messages on dental health. But a female staff member can also use the microphone and deliver a personal message to the child, calling him or her by name. Dr. Holland's creations appear in restaurants and theme parks in the U.S. and England.

Jim Kaley ('68) (Ortho '70) Greensboro has been appointed Assistant Clinical Professor in the Department of Orthodontics at UNC.

Kurt McKissick ('79) of Angier was recently named One-On-One Volunteer of the Year. The One-On-One Program matches adult volunteers with youths who have been referred to the program by law enforcement authorities and others. In some cases the youths have been in trouble with the law or else do not receive adequate attention at home. The volunteers spend four or more hours a week with a child. In several cases the program has turned children's lives around, and they no longer are problems that the courts must deal with.

Leah McKissick ('79) has been selected to serve as the 1985 Young Career Woman for the Lillington Business and Professional Women's Club. In her present position as Deputy Director for the Health Department in Wake County, she plans, implements, evaluates preventive dentistry programs, supervises employees, provides clinical care for children, and is engaged in policy-making and budget concerns.

Fred C. Miller ('59) of Boone recently presented a slide presentation at the Kiwanis luncheon on his recent trip to Haiti on a five-day dental mission. Miller described the circumstances under which he worked as highly primitive. Since he was involved exclusively in extractions, he had to take all his own instruments. Without boiling water available, he was forced to use cold sterilization techniques. He performed extractions on nearly a hundred people a day for five days. Miller emphasized the extreme poverty of the Haitian populace of the 6 million people living on the tiny island; one-half are under 15 and life expectancy is only 49 years. Principal housing consists of a one-room mud or wood shack in which 12 to 15 people may sleep; cooking is done outside; and laundry is done at the river.

Thomas Portwood ('70) one day soon may spend the morning arguing for the defendant in a malpractice lawsuit, and the afternoon extracting a pair of wisdom teeth. He graduated from Campbell University last spring and last month successfully passed his bar exam. Portwood plans to continue practicing dentistry in Hickory as he has for 15 years—and he is entering the legal profession. His eventual goal is to specialize in counsel for physicians, nurses, chiropractors, veterinarians, and especially, other dentists.

John F. Renfro ('78) of Burnsville was recently elected to the Yancey County Board of Commissioners.

Warren Rich ('82) reports the year and a half spent in Kenya, Africa, was a "very humbling experience". After two weeks of working at a 100-bed hospital and living in Kijabe, Kenya, Rich said he was about ready to pack it up. Loneliness was a major factor. He learned to adjust to the social and the physical differences. He estimates he served as dentist for about a million people. In his practice, he saw many infections, a lot of cancer, broken jaws, and a "real hodge-podge" of conditions. The fee for dental care was nominal and was paid in shillings. He indicated that it was not making money or fixing teeth that was so important but treating the whole person. He hopes to return to Africa with his wife and children one day to live because it would be a great education for his kids. He believes it will be an asset for them to grow up in that environment.

Rick Schlapkohl ('64) was recently a guest clinician of Dr. Omar Reed's for the Napili 8, accelerated practice seminar, in Phoenix, Arizona. Dr. Schlapkohl practices in Lighthouse Point, Florida.

Thomas H. Sears, Jr. ('65) has recently been elected Vice President of the UNC Orthodontic Alumni Association. Dr. Sears practices in Greensboro and serves as liaison between members and officers of the Guilford County Dental Society at the monthly executive board meetings and the Guilford County Dental Society monthly meetings.

John Spell ('71) has recently returned to his hometown, Wendell, to practice dentistry. His travels and work have taken him to various parts of the world including some exotic ones. What he left behind was a position with a prestigious dental practice in Beverly Hills, California, where he worked while teaching at the University of California at Los Angeles for eight years. The glamour of having Hollywood clients wasn't enough to keep him there. In fact the pressure of working on show-business mouths grew to be something more than what he wanted to cope with on a regular basis. So he moved back to the eastern Wake County town where he grew up. After graduation from dental school, Dr. Spell ended up in the U.S. Navy. He was sent to Japan, then Thailand (for about 90 days with a bomber wing support group), then Guam, and finally San Diego. He stayed in San Diego for a few years, but upon discharge, he chose to return to Guam as a civilian for about two and a half years. His main interest in living there again was the high quality of scuba diving.

Jeffrey Stewart ('81) completed his residency in Oral Pathology in May and recently presented a paper at the I.A.D.R. Meeting. **Denice Stewart** ('81) is on the Crown and Bridge Faculty at the University of Michigan School of Dentistry.

Jeffrey R. Thomas ('78) of New Bern has assumed ownership of **Thomas F. Webb**'s ('73) practice. He recently presented a program to the Craven County Dental Society entitled "Current Classification of Periodontal Diseases".

Bill Turbyfill ('74) was recently elected President-Elect of the Buncombe County Dental Society and to the Research Award Committee for the N.C. Orthodontic Alumni Association.

Jack D. Utley ('75 Ortho) was recently elected President of the Pennsylvania State Society of Orthodontists.

Katherine Vandermeer ('71) was guest speaker for a recent dinner meeting of the Johnston County Medical Society. Dr. Vandermeer spoke on "The Enchantment of Cosmetic Dentistry, Bonding Techniques, and Instant Orthodontics". She serves as Vice President of this group.

Thomas C. Watts ('72) of Penacook, NH has recently completed a term as President of the New Hampshire Dental Society, became a fellow of the Academy of General Dentistry in 1984 as well as a fellow of the American College of Dentists.

D.A.T.E. Update

The D.A.T.E. Faculty added a new member in December. Susan Daniel (D.A.T.E. '77) is a full-time faculty member. Her responsibilities are in the clinical courses.

Ginny Kimbrell and Sandra Strickland graduated in December. Ginny is teaching part-time and pursuing a Dental Hygiene degree at Wayne Community College in Goldsboro. Sandra is teaching part-time at Central Piedmont Assisting Program at the University of Texas Health Science Center in San Antonio.

The following students have completed their internships during the Spring Semester and received a Bachelor of Science in Dental Auxiliary Teacher Education: Eileen Albrecht, Debra Ascolese, Wanda Barnes, Valerie Flook, JoAnn Gallo, Alison Larkin, Pamela Machnik, and Judith A. Steele. Those persons receiving a Master of Science in Dental Auxiliary Teacher Education were Connie Lady, Mary Kaye Scaramucci, and Debbie Supak.

D.A.T.E. Alumni Update

Colleen Reiter ('75-D.A.T.E.) has established a temporary and permanent placement service for dental professionals in Oklahoma City, Oklahoma.

Presently there are 43 active members in the UNC D.A.T.E. Alumni Association. It is never too late to join. Non-members were recently contacted and urged to join.

HELP! Current addresses are needed for the following alumni:

Barbara Floyd Chandler
Susan Cohen
Shera Hosea
Doris Konicki
Felice Levine
Rachael Miller
Miriam Reusing
Virginia Saunders
Elizabeth Seegars
Carolyn Hilton Sellers
Pauline Spencer
Kathleen Triolo
Geraldine P. Wirthman

If anyone knows how to contact these alumni, please notify the D.A.T.E. Office.

The First Annual D.A.T.E. Alumni Day was held April 13th. Dr. Judith Disney presented an excellent program entitled "The Future of Dental Auxiliaries". The first business meeting was held for the Association and the following officers were elected for the 1985-86 year:

President, Vickye Secrist of Chapel Hill; Vice-President (President-Elect), Linda Stewart of Haw River; Secretary-Treasurer, Elise Beall of Jacksonville

District Members: Southeast, Trudy Clark of Raleigh and Jan Holland of Chapel Hill; Midwest, Colleen Rieter of Oklahoma City, Oklahoma; Northeast, Corinne Papasikos of Glen Ridge, New Jersey; West, Jeannie Martinez of Grand Junction, Colorado

A Constitution and By-Laws Committee was also elected. Members are Ethel Earl of Chapel Hill, Sandra Lytle of Raleigh, and Susan Daniel of Jamestown.

D.A.T.E. Alumni are encouraged to "keep in touch" with your alma mater. Your thoughts and whereabouts are important to your School. We hope to hear from you soon!

–Rebecca R. Scruggs

Dental Assisting Program Update

Classes and clinic rotations for the Dental Assisting students concluded at the end of April. The final component of the ten month program involved externship assignments for students in general practice offices in the Triangle area during May. Once again, the faculty and students appreciated the willingness on the part of the dental community to participate in this educational opportunity. The 1985 program graduates were honored in a graduation ceremony in Beard Hall on May 24th. The graduation address was presented by Dr. Edward H. O'Neil, Assistant Dean of Institutional Development.

The Third Annual Dental Assisting Alumni Day was held in conjunction with the School of Dentistry alumni activities on April 13th. Dr. Hillary Broder presented the continuing education program titled "Making It Toward A Healthier Self". Dental Assisting Students presented table clinics during this activity as well. Efforts by Lynn Redman Smith, Clinical Instructor and 1985 Dental Assisting Alumni Coordinator, were greatly appreciated by all participating alumni and faculty.

The Dental Assisting Program continues to maintain a job registry for Dental Assistants seeking positions in dental offices. Information from prospective employers and employees is maintained in the registry for a four month period. Anyone desiring information about Dental Assisting should contact Lynn Redman Smith, (919) 966-2803.

UNC Dental Assisting Correspondence Program Outlined

The Dental Assisting Correspondence Program, previously accredited by the ADA Commission on Dental Accreditation, has been modified and is now available as a series of 30 independent study continuing education courses. The entire series may be taken as a complete educational program, or individual courses may be taken for continuing education credit and/or review.

The modified 30 course series has been approved by the Dental Assisting National Board:

a) as a way for dental assistants who complete the 30 course series to meet the education provision of "Pathway III" toward certification, which also requires high school graduation or the equivalent, two years of dental assisting experience, certification in CPR, and satisfactory performance on the Board's certification examination; and

b) as individual courses as one way to meet the requirements for certification renewal credit.

Dental Assistants who successfully complete a course in the Dental Assisting Independent Study Series will receive recognition in the form of prescribed continuing education units (CEUs). These units may be reported to the Dental Assisting National Board which will recognize one CEU as equivalent to 10 hours of continuing education credit for certification renewal purposes. In addition, those persons successfully completing all 30 courses in the series will be issued a program certificate.

Additionally, the North Carolina State Board of Dental Examiners reaffirmed the satisfactory completion of the UNC Independent Study series as an approved education and training program qualifying a dental assistant as a Dental Assistant II. The North Carolina State Board of Dental Examiners has approved the satisfactory completion of all three radiology courses in the series as a method for a Dental Assistant I to be permitted to take x-rays in the dental office.

Each course in the series consists of four assignments as a supervised final examination. The written assignments are completed after the respective Dental Assisting manual has been studied. Many of the courses include practical exercises; and therefore, employment in a dental office is necessary. The employing dentist must agree to monitor the student's progress and, in some cases, to verify the completion of practical exercises. The employer may also supervise the final examination according to Independent Study by Extension regulations. However, all written assignments and final examinations are evaluated by faculty members approved by Independent Study by Extension, University of North Carolina at Chapel Hill.

Broad topics in the Dental Assisting Independent Study Series include office management, basic sciences, dental sciences, behavioral sciences, dental clinical sciences, and clinical applications. Enrollment may be at any time during the year. Additional information and application forms may be obtained by contacting Independent Study by Extension, University of North Carolina at Chapel Hill, Abernethy Hall 002A, Chapel Hill, North Carolina 27514.

With the sanctions of the Dental Assisting National Board and the North Carolina Board of Dental Examiners of the new focus of the Dental Assisting Independent Study Series, it is anticipated that it will accommodate more than ever before the educational desires of the working dental assistant.

DH News

Dental Hygiene Update

This summer the dental hygiene faculty offered a week long institute "Current Concepts in Dental Hygiene". Topics included radiology, fluorides, sealants, care of contemporary restorative materials, periodontics, pathology and pharmacology. The course was rated as very successful, and will be offered annually.

Dental hygiene students participate in public health screenings in the Orange County schools every fall. The program was recently awarded the Achievement Award by the National Association of Counties. Sponsored by the UNC School of Dentistry and the Orange County Health Department, the program is coordinated by Jan Carlton Holland, Assistant Professor.

The latest news from dental hygiene is filled with mixed emotions. Kathleen Morr who has directed the program since 1980 has resigned as director. We are happy that Kathie will return to her teaching activities but regret the loss of an excellent and progressive leader. Thank you Kathie for an outstanding contribution to our program.

–Donna Warren

Continued from page 11

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Dental Hygiene Alumni Association

Officers for 1985-86
President – Martha S. Taylor '75
Pres. Elect – Donna Miller '83
Sec-Treas. – Donna Warren '73

Please send news, name and address changes to Donna Warren
405 Brauer Hall 211H
UNC School of Dentistry
Chapel Hill, N.C. 27514

Name: _____

Address: _____

_____

_____ Enclosed are my 1985-86 dues ($15.00)

_____ Enclosed is my contribution to the ABD Scholarship

_____ Enclosed is news to be shared

_____

_____

Dent Notes

Want to help your TMJ patients twice as much in the same amount of time? Next time you are performing an equilibration, also let them listen to one of the new compact stereo cassette tape players, and use a self-improvement tape series that helps them learn ways to cope with stress and to change their attitudes to a more positive one (my favorite is "Who Do You Think You Are" by Dave Grant, Semantodontics Inc., Phoenix, Arizona). If they listen in order to change that which *they* can change, while at the same time you are equilibrating in order to change that which *you* can change, the combined effort will be very rewarding, with no extra time involvement for you.

–Dr. Van Haywood, Assistant Professor, Department of Fixed Prosthodontics

Constituent Update

Please send your local constituent news today to:
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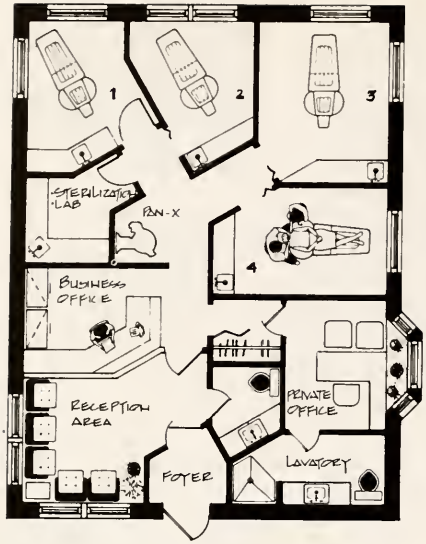
at Chapel Hill School of Dentistry
Chapel Hill, NC 27514



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(800) 362-9584 (TN)
(800) 251-9628 (KY, NC, VA)

Calendar of Events

This calendar is updated prior to each publication. Activities are scheduled in Chapel Hill, unless otherwise noted. For further continuing dental education programs, please refer to the CONTINUING DENTAL EDUCATION section. You are invited to notify our office (800-722-1355-NC or 919-966-4563-outside NC) of further activities in your area as well as checking our master calendar of events scheduled for dentistry.

September 1985

7 UNC at Navy

13,14,15 NCDS 4th District
Bogue Banks Country Club
Atlantic Beach, NC

14 UNC-LSU (home)

20,21,22 NCDS 2nd District
Charlotte Marriott

27,28,29 NCDS 1st District
Grove Park Inn
Asheville

28 UNC-VMI (home)
CE Before Kickoff:
Dr. Len Jewison, "Periodontal Therapy–A Non-Invasive Approach"

October 1985

4,5,6 NCDS 3rd District
Green Park Inn
Blowing Rock
ADA Atlanta Caucus

5 UNC at Georgia Tech

11 UNC Pedodontic Alumni Day

12 UNC-Wake Forest (home)
UNC School of Dentistry Football Day
CE Before Kickoff:
Dr. Jack Shankle, "How to Approach Endodontic Treatment"

18-20 Tarheel Endodontists Meeting, Manor Inn, Pinehurst, NC

19 UNC at NCSU

25 Seminar Day, Forsyth County Dental Society
TBA

26 UNC-FL (home)

November 1985

2-5 ADA Meeting
San Francisco, CA

2 UNC at MD

9 UNC-Clemson (home)
CE Before Kickoff:
Dr. Jay Anderson, "Medical Emergencies in the Dental Office"

16 UNC at VA

21,22,23 UNC Ortho Alumni Meeting

23 UNC-Duke (home)

December 1985

5 Annual Membership Meeting
Dental Foundation of NC
UNC School of Dentistry
Time TBA

6 Seminar Day
Durham-Orange County Dental Society Christmas Party (P.M.)

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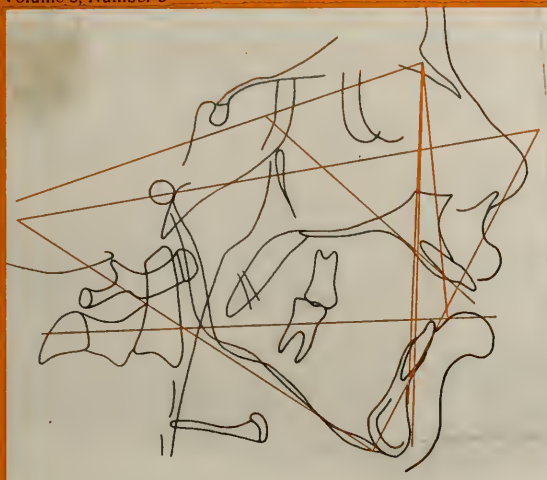
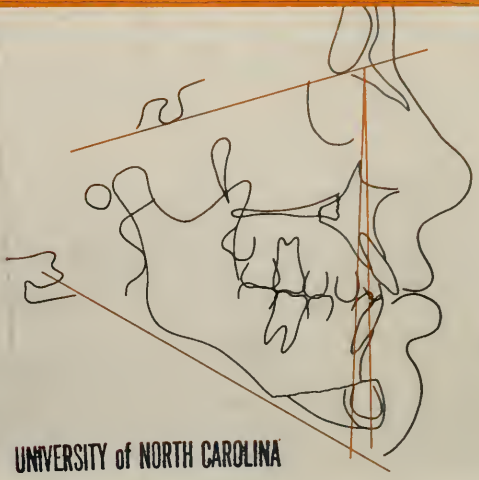
Volume 3, Number 3 Fall 1985





DENTO-FACIAL DEFORMITIES

THE NORTH CAROLINA DENTAL R·E·V·I·E·W

Magazine of The School of Dentistry • The University of North Carolina at Chapel Hill
Volume 3, Number 3 Fall 1985

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Cover: The cover illustration symbolizes the articles in this issue as they deal with dentofacial deformities.

Cover Illustration by Peter Bedick

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THE NORTH CAROLINA DENTAL
R · E · V · I · E · W
Magazine of The School of Dentistry • The University of North Carolina at Chapel Hill
Volume 3, Number 3 Fall 1985

Dr. Barker

Dean's Commentary

Lately I have been thinking about an issue which a lot of people in our profession are talking and, I suspect, thinking about. This is how people pay for their dental care and how that dental care is provided. In our shorthand vocabulary we have reduced these complex issues to common acronyms such as PPO's, HMO's, and IPA's. But I believe that our interest in them is a part of a broader set of changes which are now working their way through our profession.

Most dental care is still delivered on a fee for service basis by a solo private practitioner. In North Carolina this is even more the case than it is nationally. We should always remember that it is this system of health care delivery which has made enormous contributions to the amazing record of improved oral health which has marked the United States over the past thirty years. Not only should it be remembered, but we should collectively take pride in this accomplishment. As good as the past was for us professionally and for the public's health we cannot go back in time. The nature of dentistry–the mix of restorative, preventive, and esthetic care–which is demanded by the public is not, cannot, be what it was in 1965. The nation, which was willing to pay an even larger percentage of the gross national product for health care over the past three decades, is no longer content to put these ever-increasing portions of its income into health whether medical, dental or hospital care. The impulse to cost containment is palpable in every quarter of the health care environment. While our world was once essentially composed of the professional and his patient in a rather intimate connection with an occasional third party carrier playing an unobtrusive role, we cannot hope for its revival any more than an eighteenth century English cottager could hope for the return of the bucolic countryside once industrialization had taken place. We have become part of the modern bureaucratic-corporate world, like it or not, and, increasingly we will play by their rules, like them or not. The argument that the old system was good for our patients, good for the general health of the public and good for us will not carry much weight in this new era in which we will find ourselves living.

If this sounds less than optimistic I do not intend it to be. Rather, it is meant as a challenge and a warning. A challenge in that we have a noble and worthwhile profession and a remarkable tradition of service to the public well-being. If we are to continue to contribute to this tradition then we must do it within the new realities of a changing health care environment. I am not suggesting that we should acquiesce to the demands of every new agency or corporation which wants to establish how health care is provided or paid for, but I do believe that our profession's opinions and learned conclusions must be put in ways which will find relevance and meaning within this new world. This is the challenge.

The warning is that this will not be easy. It will require that each practitioner have a willingness to spend the time to understand the changes and what they will mean. It will require a willingness to alter some or many or perhaps most of our current practice patterns and attitudes about health care delivery. It will require new organizations or alternatives in existing ones. It will require the resources of time, energy and money from every dentist. And, it will require an unselfish brand of leadership and fellowship from the entire professional community.

I wish I could share a vision of how things should be in the future and enlist your support of that idea in a campaign to address these broad changes. I cannot; no one can. The situation is too complex. Part of the challenge is working through these complex changes together and with others to design and reach new arrangements for health care. If anyone presents a solution which seems too good to be true, you may rest assured that it is.

What I can offer is the University of North Carolina School of Dentistry as a resource to help the practicing profession work through these challenges. Our commitment and reason for being is the same as every practitioner in this state–improving oral health for all North Carolinians.

Ben D. Barker ('58)

Dentofacial Program UNC-CH School of Dentistry

Timothy A. Turvey, D.D.S.[1]

[1]*Associate Professor, Department of Oral and Maxillofacial Surgery, UNC School of Dentistry*

The Dentofacial Program was introduced to the dental community in the 1977 Winter issue of the *North Carolina Dental Journal*. This multidisciplinary effort was initiated to manage patients with handicapping malocclusions and facial deformities. The challenge of providing treatment for these patients was undertaken by the UNC Departments of Oral and Maxillofacial Surgery and Orthodontics. With the support of the UNC-CH School of Dentistry and the respective departmental chairman, this pursuit has evolved into a nationally and internationally recognized center for comprehensive management of patients with dentofacial deformities.

Shortly after the inauguration of the Program, it was recognized that the complexity of the problems presented by some patients required periodontal and prosthodontic treatment. These two aspects of care as well as consultation service from other dental and medical support groups are now available. Presently, all necessary services including coordinated diagnosis and treatment planning, pre- and post-surgical orthodontics, periodontal, prosthodontic and general dental care, as well as surgical management are offered. Interaction with the Oral Facial Communicative Disorders Program, the School's multidisciplinary cleft palate team especially when patients with complex craniofacial deformities are involved, enhances the capabilities of the treatment through the Program.

One purpose of the Dentofacial Program is to function as a diagnostic and treatment coordination center. Most patients are referred by their orthodontist, general dentist, or health care practitioner. At the weekly clinic, patients are evaluated by a surgeon, orthodontist, and periodontist. When prosthodontic or other dental needs are required, appropriate specialty or general dental consultations are accomplished.

At the first visit, a complete set of records are obtained including facial and intraoral photographs, diagnostic casts, cephalometric and panoramic radiographs, jaw relation records and periodontal charting. Diagnostic findings are analyzed, and presented at a weekly conference attended by representatives from surgery, orthodontics, periodontics and prosthodontics. After evaluation and discussion, a treatment plan is generated predicated on the patient's desires and team findings. A letter is returned to the patient's referral source and to the patient summarizing the team's suggestions.

At a second appointment, the findings and suggestions for treatment are discussed in detail with the patient. The patient then returns to the referring doctor for initiation of treatment. The fee for this comprehensive diagnostic service is $150.

The expense of treatment can be considerable. Fortunately, most patients have medical insurance which covers orthognathic surgery and hospitalization. Needy patients occasionally are assisted by programs and agencies willing to help.

All surgical procedures are performed, as a matter of course, at North Carolina Memorial Hospital adjacent to the UNC-CH School of Dentistry. Postoperative hospitalization is relatively brief, ranging from three to five days. Post-surgical visits are usually spaced two weeks apart for several months. Hygiene, weight, diet, and healing responses are closely evaluated at each visit. When healing has progressed satisfactorily, patients are returned to their orthodontists for completion of orthodontic care. The patients are evaluated again at six-monthly and yearly intervals by both surgeons and orthodontists to monitor progress and stability.

Between 1977 and 1984, the Program has provided diagnostic services for more than two thousand patients. Almost twelve hundred bilateral osteotomies have been conducted on more than eight hundred patients at North Carolina Memorial Hospital during this period. Of these operations, forty percent were maxillary osteotomies and sixty percent were mandibular osteotomies. Greater than ninety-nine percent of these patients were treated in conjunction with orthodontic care.

The results of treatment and the community's response have been favorable. Even though this type of surgical-orthodontic treatment is complex and complications occasionally arise, morbidity from these complications is minimized by immediate detection and appropriate treatment.

Innovative surgical and orthodontic treatment modalities have resulted from cumulative experience. In addition to providing referring dentists and patients with needed services, the Dentofacial Program is a valuable resource for educational purposes. Orthodontic as well as oral and maxillofacial surgery residents gain immeasurable experience in evaluating, treatment planning and treating patients with dentofacial deformities. Undergraduate dental students and occasionally medical students are encouraged to attend weekly conferences to gain familiarity with patients' problems and the sequencing of treatment. Continuing education courses are also offered to both surgeons and orthodontists to familiarize them with the Dentofacial Program and the most current methods of dealing with dentofacial deformities.

Research is another important aspect of the Dentofacial Program. Data collected from patients are stored and are available to support investigations conducted by faculty and graduate students. The stability of dental and esthetic change is a prioritized investiga-

tion supported by a major grant from the National Institute of Dental Research. These data have supported more than ten masters theses. Currently, several other research projects associated with the program are supported through grants funded by the National Institute of Dental Research, private industry, and the University Research Council.

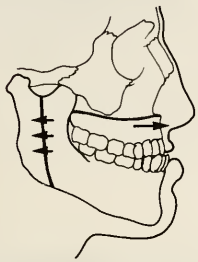
CONCLUSION

Our experience in managing patients with dentofacial deformities has been favorable. New horizons for the dentofacially impaired are realized by closely coordinated surgical, orthodontic, periodontic and prosthodontic care. The University of North Carolina Dentofacial Program is able to provide this comprehensive service and is a valuable resource for the dentists in North Carolina. Additionally, the program supports the research and service endeavors of the UNC-CH School of Dentistry.

Patients may be referred to the Dentofacial Program by contacting the office of the Dentofacial Program, University of North Carolina School of Dentistry, Chapel Hill, North Carolina 27514, (919) 966-4428.

Case Studies

Timothy A. Turvey, D.D.S.



Pre-surgical condition

Pre-surgical condition

Pre-surgical condition

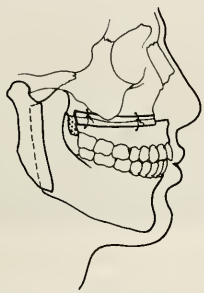


Illustration of the surgery with bone grafts in place.

Pre-surgical condition

Post-surgical and prosthetic treatment.

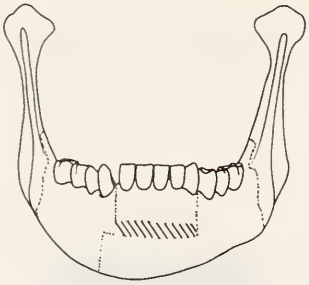
W.C.

This 19-year-old with a repaired cleft lip and palate underwent orthodontic preparation and then surgery to advance his maxilla and reposition his mandible. Simultaneously, the oral-nasal fistula was closed and the cleft maxilla was reconstructed with a bone graft. Subsequently, a rhinoplasty and lip revision were performed and finally, prosthetic dental reconstruction was completed. His treatment was coordinated through the Oral Facial Communicative Disorders Program.

This patient's treatment illustrates the results obtainable when procedures are sequenced properly. It is usual to reconstruct all hard tissues (bone) prior to soft tissues. Prosthetic dental treatment is usually delayed until completion of all hard and soft tissue procedures.

Post-surgical and prosthetic treatment.

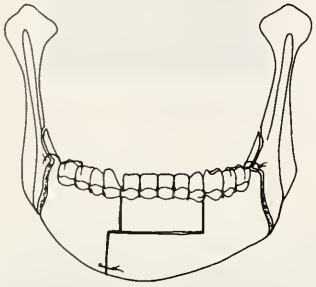
Post-surgical and prosthetic treatment.



This illustration depicts surgical leveling of the mandibular anterior segment, bilateral sagittal osteotomies of the ramus to advance the mandible and a body osteotomy to narrow the mandible.

Pre-surgical condition

Eighteen months post-surgery. Notice the Class I cuspid relationship and the mandibular anterior teeth no longer traumatizing the palate.



Post-surgical condition

G.A.

This 33-year-old male was concerned about his deteriorating dentition and the fact that his mandibular anterior teeth were traumatizing his palate. Of additional concern was his chin deficiency and lack of zygomatic prominence.

A treatment plan consisting of periodontal therapy including grafting to the mandibular anterior teeth, orthodontics, surgery, and prosthodontics was developed. The goal of pre-surgical orthodontics was to level and align the maxillary arch. The mandibular teeth were segmentally aligned to allow for surgery to level and narrow the arch form and to advance the mandible. Additionally, Proplast® was to be implanted over the zygomas and infraorbital rims bilaterally.

Eighteen months following surgery, the patient's functional and esthetic results remain stable. Currently he is awaiting prosthetic rehabilitation of his missing mandibular premolars.

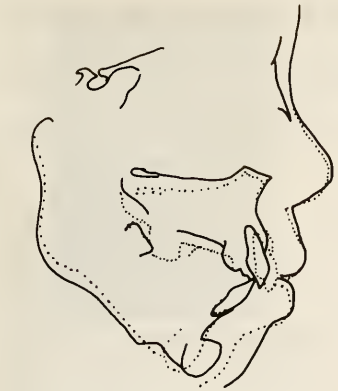
®Vitek Inc, Houston, Texas

Pre-surgical condition

Eighteen months post-surgery. Notice the Class I cuspid relationship and the mandibular anterior teeth no longer traumatizing the palate.

Pre-surgical condition

Post-surgical condition



Cephalometric superimposition tracing indicating the changes resulting from surgery.

Pre-surgical condition

Pre-surgical condition

Pre-surgical condition

One year following surgery

One year following surgery, prosthetic rehabilitation has been accomplished with a removable partial denture.

D.G.

This 28-year-old woman was concerned because of the problems her ridge relationships presented to denture construction. Premature loss of her posterior maxillary teeth resulted in continued vertical development of the alveolar ridges bilaterally to the extent that they contacted the occlusal surfaces of her mandibular teeth. This combined with a Class II malocclusion made conventional partial denture construction impossible.

Following periodontal treatment, all remaining teeth were banded with orthodontic appliances. The maxillary and mandibular arches were aligned and prepared for surgery. The surgery included moving her maxilla back and rotated up in the posterior regions to create sufficient room for a partial denture. An augmentation genioplasty was also performed at surgery.

One year following surgery the patient was able to be reconstructed with a removable partial denture. The facial esthetic change has been complementary.

One year following surgery

One year following surgery, prosthetic rehabilitation has been accomplished with a removable partial denture.

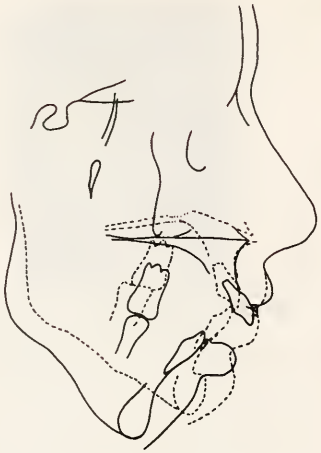
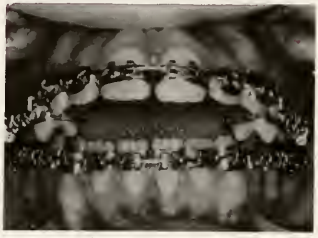


Illustration of the surgical procedure which included superior repositioning of the maxilla in segments and an augmentation genioplasty.

Pre-surgical condition.

Pre-surgical condition.

Cephalometric superimposition indicating the changes resulting from surgery.



Pre-surgical condition.

Eight years following surgery.

L.P.

In 1976 this case was reported in the *North Carolina Dental Journal*. It exemplified the type of result obtainable by coordinated treatment involving surgery and orthodontics. In addition to orthodontics, the patient underwent superior repositioning of her maxilla in three pieces, an augmentation genioplasty, and as a secondary procedure, a rhinoplasty. Eight years later, her esthetic and functional results remain stable.

One year following surgery.

Eight years following surgery.

Benefits and Effects of Surgical-Orthodontic Care

William R. Proffit, D.D.S., Ph.D., M.S.[1] and Raymond P. White, Jr., D.D.S., Ph.D.[2]

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[2]*Professor, Department of Oral and Maxillofacial Surgery, UNC School of Dentistry and Associate Dean, UNC-CH School of Medicine.*

POSSIBILITIES FOR ORTHODONTICS, ORTHOPEDICS, SURGERY

Developments in orthognathic surgery within the past two decades have made it possible to correct a number of dental and facial deformities so severe that they simply could not be treated previously. Twenty-five years ago a prognathic mandible with a Class III malocclusion was almost the only condition for which surgery was recommended. In the 1980's severe problems of any type can be approached surgically.

There are three possible ways to treat patients with severe orthodontic problems: (1) orthodontic tooth movement; (2) a combination of orthodontics and orthopedics, involving both tooth movement and redirection of jaw growth, which obviously can only succeed in growing children; and (3) surgical repositioning of the jaws and/or teeth in combination with orthodontics. The difference in the possibilities with the three types of treatment can be illustrated best using the "envelope of discrepancy" to show the amount of correction that can be obtained by each of these modes of treatment (Fig. 1).

The limits of orthodontic treatment in the antero-posterior and vertical planes of space are represented by the inner circle; possible changes from combined orthopedic and orthodontic treatment in growing children are shown by the middle circle; and the limits of change with combined orthodontic and surgical treatment are shown by the outer circle.

It is important to note that the possible changes are not symmetrical. The limits of surgical treatment, though

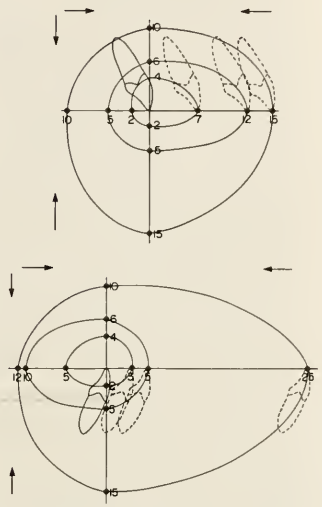

Fig. 1.
The "envelope of discrepancy," showing the approximate limits of orthodontic tooth movement alone (inner circle), tooth movement plus growth modification (middle circle), and orthognathic surgery (outer circle).

greater in every instance than the possibilities for orthodontic and/or orthopedic treatment, are fairly close to orthodontics/orthopedics in some directions and quite different in others. For example, note the possibilities for positioning the maxillary incisors by orthodontic movement alone. The inner circle for the maxillary arch suggests that the protruding incisors can be brought back a maximum of 7 mm by orthodontic tooth movement alone, but can be moved forward only about 2 mm in a Class III problem if the axial inclination at the beginning was normal. Maxillary incisors can be extruded 4 mm and depressed 2 mm. The middle circle for the mandibular arch indicates that the mandible as well as the teeth can be brought forward 10 mm by a combination of growth changes and tooth movement but can be brought back (growth restrained) by only 5 mm. The outer circle for the mandibular arch suggests that approximately 12 mm is the limit for mandibular advancement. However, a prognathic mandible can be set back 25 mm while the chin can be elevated 15 mm or depressed 10 mm surgically.

Note that for treatment of a deficient mandible, growth modification has almost as much potential as surgical mandibular advancement in a child with good growth potential. In a non-growing adult nowhere near as much change can be produced by tooth movement as by surgery. For a prognathic mandible, surgery has tremendous potential for change while neither tooth movement nor growth guidance offers much possibility at all. If the face must be shortened requiring intrusion of the maxilla or mandible, only small changes are possible with orthodontic or orthopedic treatment while 15 mm of change can be produced surgically. Other comparisons can be made from observing the various envelopes.

From the shape of the envelopes, it is not surprising that a prognathic mandible was recognized early in this century as a primary indication for surgery. The ineffectiveness of other treatment modalities in dealing with this problem undoubtedly stimulated the early development of mandibular surgery. The envelope diagram also illustrates the particular advantage that surgery offers in long-face problems particularly in non-growing individuals and the important therapeutic advance that surgical maxillary intrusion created.

These numbers, of course, are only

guidelines. They may underestimate or overestimate the possibilities for any given patient, but they do serve to place the potential of the three major treatment modalities in perspective. The transverse plane of space is not represented in Fig. 1. Correction by orthodontic tooth movement has narrow limits, less than 5 mm. Combined surgery and orthodontics can make corrections up to 15 mm, particularly if surgery is performed in both jaws in conjunction with orthodontics. When surgical treatment makes it possible to treat problems that could not be treated otherwise, this refers to the ability to treat patients who fall outside the envelope of orthodontic and orthopedic treatment.

As with any type of treatment, there are limits to orthognathic surgery. Although a jaw or jaw segment can be moved only so far before the soft tissues that provide the blood supply can be stretched no further, this rarely is the major limitation. The factor that usually limits surgery is the amount of movement that is compatible with long-term stability. Surgical advancement of the mandible provides an excellent example. The mandible can be moved forward, at surgery considerably further than the 12 mm shown in the envelope of discrepancy, and in fact it may be necessary to do this in some unusual cases. Data from follow-up of patients who have undergone mandibular advancement, however, suggest that the stability of the advancement tends to decrease sharply as advancements of greater than 8-10 mm are attempted. This leads to the general guideline that advancements of more than 12 mm, though technically feasible and quite possible at the time of surgery, are so prone to relapse that stable advancement of about 12 mm is the practical limit. Similar thinking applies to the other guidelines included in the envelope diagrams.

The relapse tendencies that create limits for stable repositioning of jaws and jaw segments largely are created by the pull of soft tissues. One would expect surgical changes to be quite unstable if the muscles did not adapt to the new jaw position, and experience has shown this to be correct. Rotating the mandible at surgery in a way that stretches the powerful muscles of the pterygomandibular sling creates an immediately and often disastrously unstable situation postsurgically. Fortunately, there is excellent neuromuscular adaptation to most changes created by surgery. If surgical procedures that lengthen the ramus of the mandible and thereby stretch its elevator muscles are avoided, instability from muscle pull is largely eliminated. For example, if the maxilla is moved up, neuromuscular adaptation causes the mandible to rotate upward to accommodate the new intercuspal position and freeway space stays the same.

Neuromuscular adaptation is mediated by the central nervous system—if the nervous system calls for adaptation, it is physiologically possible and occurs instantaneously. But there are no such central coordinating mechanisms for the soft tissues other than muscle. If the jaws or teeth are moved in a way that relaxes the soft tissues of the face and cheeks, no forces that could cause bone or tooth movement postsurgically are created, and the surgical correction should be and almost always is stable. If the soft tissues are stretched, their impact is not evident immediately. The elastic rebound of the soft tissues will create light, constant pressure against the teeth and jaws until the soft tissues can remodel. This is usually accomplished in 60-90 days. The result is a tendency for some repositioning of the boney segments to occur in this time frame even with teeth wired together. This is observed primarily when the mandible is advanced and when the maxilla is moved down. Both of these procedures stretch the facial soft tissues, and with both types of treatment the mandible tends to slip back or the maxilla tends to move upward during the first weeks postsurgically. In contrast, when the mandible is moved back or the maxilla is moved up, soft tissues are relaxed. Both of these movements are quite stable postsurgically. Advancing the maxilla within reasonable limits, usually, is stable.

The tremendous difficulty that often is experienced in treating severe open bite problems orthodontically or orthopedically has led many dentists to expect that extreme relapse tendencies would be seen after surgical treatment of these patients. In fact, excellent neuromuscular adaptation accompanies surgical intrusion of the maxilla allowing the mandible to rotate upward and forward to correct an open bite. Since this procedure also relaxes the soft tissues, it is not surprising that the results are remarkably stable. In this situation, as in almost all orthognathic surgery, soft tissue adaptation determines the long-term stability.

COMBINED SURGERY-ORTHODONTIC TREATMENT

Treatment of patients who have both dental and jaw deformities is possible because of advances in orthognathic surgery, orthodontics, and anesthesiology. Laboratory and clinical research has demonstrated that jaw segments can be repositioned surgically as long as a blood supply is maintained to the bone and teeth via a soft tissue pedicle. Surgical techniques are predicated on this premise, and surgical instruments such as microsaws have been designed so that almost all of the surgery can be done intraorally. Surgical manipulations of bone and soft tissue require considerable planning and meticulous approach at surgery. However, surgical procedures on both jaws can be accomplished under the same anesthetic in a few hours, and separate stages of surgery rarely are necessary. Advances in anesthesiology and patient monitoring allow for extensive jaw surgery without a prolonged anesthetic recovery period. The usual hospitalization is less than five days. On the day of surgery patients are encouraged to be ambulatory within hours after they are released from the recovery room.

Jaw segments must be held firmly in place until clinical healing is adequate. The most common approach to this immobilization is intermaxillary fixation for 6-8 weeks. However, advances in orthodontic technique coupled with refined techniques in surgery have reduced the period of intermaxillary fixation. In some instances patients may not have their jaws wired at all. Following surgery, patients usually return to their daily activities within two weeks. The surgical phase of treatment usually lasts three months. When sufficient clinical healing has taken place, the patient may be returned to the orthodontist for completion of tooth movement. It is remarkable that combined surgery and orthodontics can treat severe jaw deformities in the same time frame or even more quickly than conventional orthodontic treatment involving tooth movement alone.

Diagnosis and Planning

The use of a common, logical scheme for evaluation and treatment planning for patients with dental and facial deformities has enabled orthodontists, oral and maxillofacial surgeons, periodon-

tists, and restorative dentists to provide coordinated treatment. Each involved dentist can develop a database and catalogue the patient's problems. The problem list is derived from a general evaluation of the patient, a clinical examination and an analysis of diagnostic records. The approach should be as objective as possible without disciplinary bias.

Most patients seeking treatment are healthy, and a medical/dental history and examination confirms that they are a good risk for surgery. If the patient is not an adult, the dentist must determine whether the patient's growth is complete or not. Questioning the patient regarding recent growth spurts and superimposition of tracings from serial lateral cephalometric radiographs are the most direct approaches in making this determination. A psychosocial evaluation remains a difficult task for most dentists. A severe dental and facial deformity usually has some impact of personality and this is to be expected. The patient with a minor jaw deformity and a major personality problem must be identified at the initial evaluation and referred for counseling. Fortunately, most patients are satisfied following treatment of dental and facial deformity particularly as compared with patients undergoing cosmetic surgery. The fact that a thorough analysis of the patient's problems includes the interaction of several dentists and the treatment takes place over a period of time, seems to enhance realistic patient expectations.

After determining that the patient is healthy, a thorough clinical examination provides the substance of the information in the data base. Facial proportions should be evaluated from a full face and a profile view. A discrepancy may exist in three planes of space—anteroposterior, vertical, and transverse. These problems must be recognized clinically and recorded. When a jaw deformity exists, the teeth shift on the jaw to compensate for the skeletal discrepancy. Because of this dental compensation the teeth usually are not located in proper position in the jaws and the degree of dental compensation should be noted. Special attention should be paid to the support that the teeth provide to the lips and the degree of lip incompetence. A thorough intraoral evaluation must also identify abnormalities in the nasal, oral or pharyngeal structures. A periodontal evaluation, including probing, is necessary to assess the support for existing teeth. The dental occlusion, particularly as it relates to jaw function, must be thoroughly assessed. Frequently patients with mandibular deficiency or with asymmetry have discrepancies between retruded contact position of the jaws and intercuspal position of the teeth.

Diagnostic records including facial photographs, radiographs (cephalometric, panoramic, and intraoral views), and dental casts must confirm clinical findings. When a discrepancy exists, the clinical findings take precedence. When the data base for an individual patient is complete, a list of problems evolves for that patient.

Planning treatment requires the interaction of all of the dentists who are treating the patient. Finding time to discuss a complex case is always difficult for busy clinicians. However, almost all of the difficulties that arise following treatment can be traced to inadequate attention to this step in the process. Tentative solutions for each problem on the list should be proposed by every clinician involved with severe problems given preference. Once solutions are identified, dental casts must be manipulated and cephalometric tracings made to predict anticipated results. When all dentists have agreed on a final treatment plan, it should be presented to the patient and a summary letter sent as a confirmation.

Because the interaction of the dentists involved in treating patients with complex problems is so important, formal programs have evolved to facilitate the clinicians' interaction with the patient. The Dentofacial Program at the University of North Carolina School of Dentistry serves as a consultation service for referring dentists who have such patients. At the same time the Dentofacial Program is a forum for teaching treatment planning to dental students, graduate students/residents, and dentists attending continuing education programs. Although most of the patients seen in consultation receive their treatment away from the university setting, the patients are given the opportunity to participate in clinical research programs at the university.

Guidelines for Treatment

A coordinated approach by all dentists involved with a patient can produce a result that cannot be achieved by a dentist working from a single disciplinary approach. The best result requires that the treatment be coordinated at each stage. Once the patient makes the decision to pursue treatment, dental caries must be arrested and periodontal disease brought under control. Definitive restorative dentistry and periodontal treatment can then be delayed until orthodontics and surgery are completed (Fig. 2). The goal of orthodontic therapy in these patients is the removal of dental compensation, that is, the teeth must be moved into an appropriate position over their respective jaws. If teeth are removed to accomplish this end, space closure should be complete before surgery. Removing dental compensation will make the dental deformity appear worse, but this interim situation is readily accepted by the patient. Once the orthodontist feels the patient is ready for surgery, the clinical examination and diagnostic records are repeated. Interaction among the team of dentists treating the patient is man-

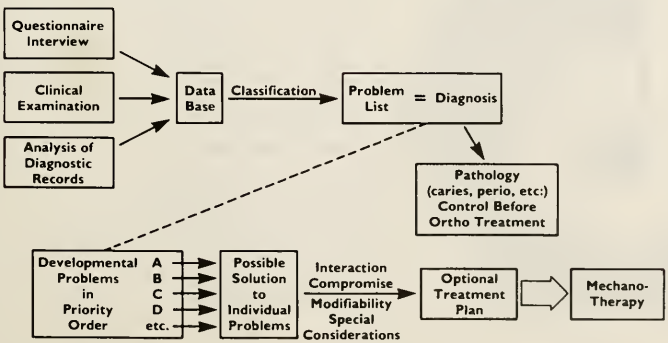

Fig. 2.
Diagrammatic representation of the diagnostic and treatment planning scheme recommended for patients with orthodontic problems, including those who require orthognathic surgery.

datory at this step to aid the surgeon in determining the best position of the jaws at surgery.

Following surgery and an appropriate period of physical therapy, usually about three months, the patient returns to the orthodontist to complete the interdigitation of teeth, space closure, and root paralleling. The total length of treatment for most patients should not greatly exceed the average treatment time for a patient undergoing orthodontics alone, 18-24 months. The retention phases in combined surgical-orthodontic cases are similar in approach to the usual orthodontic case.

In summary, patients with dentofacial deformity can be helped by the combined treatment of the orthodontist, oral and maxillofacial surgeon, general dentist, and other appropriate dental specialists. Diagnosis and treatment requires close coordination among the disciplines involved and a meticulous attention to details and timing of treatment. Over the past decade the limits of treatment have been defined so that results are quite predictable. Treatment of dentofacial deformity is a significant contribution by dentistry to the health and well being of our patients.

Evaluation and Treatment of Patients with Dentofacial Deformities: A Multidisciplinary Approach

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Treatment of patients with dentofacial deformities has often been accomplished by individual practitioners. In some cases patients have been treated with orthodontics alone resulting in an excellent occlusion but with a compromise in facial esthetics. Other patients were treated surgically without orthodontics in an attempt to correct a deformity, achieving improved facial esthetics without an ideal postsurgical occlusion. In addition to orthodontic and surgical needs, these patients often present many other problems requiring periodontic, endodontic, complex restorative, and prosthodontic considerations.

When addressing the complex problems of dentofacial deformity patients there is a need for multiple practitioner interaction and participation. The University of North Carolina Dentofacial (DFD) Program integrates orthodontists, oral and maxillofacial surgeons, generalist-restorative dentists, prosthodontists, endodontists, and periodontists in the multidisciplinary treatment of dentofacial deformity patients. Ongoing practitioner interaction throughout the evaluation, presurgical, and postsurgical phases of patient care ensures the best possible results in the treatment of these patients.

EVALUATION AND TREATMENT PLANNING FOR DENTOFACIAL DEFORMITIES

The most important phase in patient care is a thorough evaluation of the existing problems and definition of treatment goals. (Proffit, Epker, and Ackerman 1983) At the initial DFD appointment a thorough interview is conducted with the patient to discuss his or her perception of the problems as well as goals of any possible treatment which may be accomplished. The patient's current health status and any medical problems which may affect treatment are also discussed at this time.

At the initial appointment, the orthodontist and oral and maxillofacial surgeon conduct a thorough examination of facial structure with emphasis on full facial as well as profile esthetics. An occlusal examination including evaluation of jaw and TMJ function is also performed at this time. A screening periodontal examination including probing is done to assess the patient's hygiene and current overall periodontal health status. Diagnostic records include a series of facial and intraoral photographs which are taken in the School's Learning Resources Center. Impressions and jaw relation records for dental cast construction and evaluation are obtained in the orthodontic clinic. Lateral cephalometric and panorex radiographs as well as PA facial films and temporomandibular joint films, when indicated, are also obtained at this first visit.

Two weeks after the initial patient evaluation the results of examination findings, photographs, casts and radiographs are presented and discussed at the Dentofacial conference. The conference is attended by orthodontists, oral and maxillofacial surgeons, periodontists, restorative dentists, and other interested practitioners. A final treatment plan recommendation is developed, by consensus, with special consideration given to the appropriate sequencing of treatment phases. After discussing the proposed treatment plan with the patient, recommendations are forwarded to the referring orthodontist and general dentist for pre-surgical periodontal, restorative, and orthodontic treatment.

PRE-SURGICAL TREATMENT PHASE

Periodontal Considerations

Prior to any comprehensive orthognathic care, control of gingival inflammation and assurance of adequate patient motivation must occur. It is unlikely that an improvement will occur when oral hygiene procedures are complicated by orthodontic band placement. Periodontal therapy including oral hygiene instruction, scaling, root planing, and in certain instances, flap surgery in order to gain access for root planing, may be needed to provide proper tissue health. Whenever possible, it is desirable to delay comprehensive treatment until adequate patient compliance and control of inflammation is achieved.

Mucogingival surgery is often accomplished during the initial phase of therapy in order to provide a zone of attached keratinized tissue which is more resistant to potential orthodontic and surgical trauma. (Foushee, Moriarty and Simpson) Soft-tissue grafting is indicated in areas that have no keratinized gingiva or where there is a thin band of keratinized tissue with little or no attachment when an increase in the amount of tissue trauma is likely (Fig. 1). Such trauma to these areas includes labial orthodontic movement of teeth or a surgical procedure such as a genioplasty or segmental osteotomies in interdental areas.

Following orthodontic band placement the patient's oral hygiene must be carefully monitored. Frequent recall maintenance appointments for scaling and root planing may be necessary throughout orthodontic therapy. It is unusual for a patient wearing orthodontic bands to have longer than a three-month recall interval during treatment and a one or two-month recall interval is not uncommon. A mucogingival assessment should also be accomplished at each recall appointment.

Two weeks prior to the anticipated orthognathic surgical procedure, a comprehensive periodontal examination should be repeated. At this time there should be a concerted effort to achieve optimal tissue health prior to the surgery and subsequent period of intermaxillary fixation.

Restorative Considerations

During the pre-surgical restorative phase, the patient is evaluated for carious lesions and faulty restorations. The remaining teeth are evaluated endodontically and periodontally and nonrestorable teeth are extracted prior to surgical intervention. All carious lesions are restored early in the presurgical treatment phase. These restorations must often function for lengthy periods of time during the orthodontic and surgical treatment requiring that "permanent" restorative materials (amalgam and composite resin) be employed even though they may be replaced or utilized as foundations during the postsurgical definitive treatment phase. If placement or replacement of crowns is required at this time, they should be fabricated using long lasting temporary material.

Definitive restorative or prosthodontic treatment is delayed until the proper

Fig. 1 (A)
Pre-surgical appearance of gingival tissue lacking adequate area of attachment and kertinization.

Fig. 1 (B)
After free gingival grafting (note improved band of attached, keratinized tissue).

skeletal relationships are achieved and orthodontics completed. Castings fabricated prematurely may occlude poorly after surgery due to skeletal repositioning and change in functional pathways. The patient should be cautioned that fixed partial dentures or splinted castings frequently may need to be sectioned to allow individual tooth alignment. If cast restorations are serviceable they can be banded in the course of orthodontic treatment. Orthodontic brackets can be bonded to porcelain facings using special conditioners which allow adherence of the bracket pad.

In the edentulous or partially edentulous patient, residual ridge shape and contour in denture bearing areas should be evaluated for adequacy of height and contour. Any need for ridge modification is conveyed to the patient and oral and maxillofacial surgeon prior to the surgical phase of therapy. During this phase, endentulous posterior areas (especially the distance between the maxillary tuberosity and the ramus) are evaluated to ensure sufficient room is available for removable partial dentures.

Teeth that will serve as removable partial denture abutments are evaluated for potential retentive undercuts.

Pre-surgical Orthodontic Considerations

Treatment Timing—Treatment of the stable adult deformity can be started without delay. However, questions often arise considering how to best manage the growing child with a developing dentofacial deformity. If the facial pattern is favorable, and adequate growth potential remains, growth modification may be attempted. Surgery is usually reserved for patients who do not respond to growth modification or who do not desire to attempt this approach. As a general guideline, orthognathic surgery is usually delayed until growth is essentially complete in patients who have problems of excess growth, especially mandibular prognathism. (Bell and Jacobs, 1981) Surgery can be considered earlier for patients with growth deficiencies. (Wolford, Schendel and Epker, 1979)

Fig. 2
Photograph of patient with mandibular excess compensated by flaired upper incisors and retroclined lower incisors.

Orthodontic Treatment Objectives—Undesirable angulation of the anterior teeth often occurs as a response to a developing dentofacial deformity. For example, patients with maxillary deficiency and/or mandibular excess often have flaired maxillary incisors and crowded, retroclined mandibular incisors (Fig. 2). The opposite situation may occur in maxillary protrusion and/or mandibular deficiency.

In surgical-orthodontic treatment, dental compensations for the skeletal deformity are corrected prior to surgery and the teeth are properly located in relationship to the individual skeletal components. This orthodontic movement accentuates the patient's deformity but is necessary if normal occlusal relationships are to be achieved when the skeletal components are properly positioned at surgery (Fig. 3).

The essential steps, then, in orthodontic preparation, are to individually align the arches, achieve compatibility of the arches or arch segments, establish the anterior-posterior and vertical position of the incisors. These procedures are necessary so the position of the teeth

Fig. 3
Photograph demonstrating decompensation of incisor position by retroclining upper incisors and flairing lower incisors.

will not interfere with placing the jaws in the desired position. The amount of presurgical orthodontics can be quite variable, ranging from nothing but appliance placement in a few patients to approximately twelve months of appliance therapy in those with severe crowding and incisor malpositions. The post-surgical phase is more constant in duration. Usually six months are required and three to four months is the usual time for completion of postsurgical orthodontics.

As the patient is approaching the end of orthodontic preparation for surgery, impressions are made and hand articulated casts are evaluated for occusal compatibility. Minor interferences that can be easily corrected with archwire adjustment may significantly alter surgical movements. When final orthodontic adjustments have been made the stabilizing archwires are placed. These are large rectangular wires which fit tightly in the brackets and provide the strength needed to withstand the forces resulting from intermaxillary fixation. Brass lugs are soldered to the archwire as attachments for the fixation wiring. Prefabricated ballhooks may also be used and are welded or soldered onto the archwire.

SURGICAL TREATMENT PHASE

After the completion of the presurgical periodontics, restorative dentistry and orthdontics, the patient returns to the oral and maxillofacial surgeon for pre-surgical planning. This pre-surgical appointment is similar to the initial patient examination completed at the first DFD appointment. The patient's facial structures as well as the malocclusion are reevaluated. Presurgical photographs, appropriate x-rays, impressions for presurgical casts, a centric jaw relation record, and face-bow registration are made.

Mock surgery is accomplished on a duplicated set of pre-surgical casts. This procedure is necessary to determine the exact surgical movements required to accomplish the desired postoperative occlusion (Fig. 4). Prediction tracings are also completed to determine the desired post-operative facial esthetic result (Fig. 5). (Bell, Creedmore and Alexander, 1977) Following completion of the cast surgery and prediction tracings, the orthodontists and general dentist are consulted to ensure that the post operative occlusal result is acceptable. Any orthodontic or restorative changes necessary to improve the post-surgical position are accomplished at this time.

Patients are admitted to the hospital one day prior to surgery for complete physical examination, pre-operative laboratory tests, x-rays and consultation with the anesthesiologist. The day following admission, surgery is accomplished in the main operating room under general anesthesia. Following surgery the patients are taken to the recovery room for an appropriate period of time. They are returned to their hospital room later that day. Post-operative progress is continually monitored by a nursing staff trained and experienced in the post-operative care of orthognathic surgery patients. As soon as feasible, after the surgical procedure, post-operative radiographs are obtained to ensure that the predicted bony changes have been accomplished. When the patients are comfortable, taking food and fluid orally without difficulty, and ambulating well, they are discharged. The post-surgical hospital stay ranges from 1-4 days.

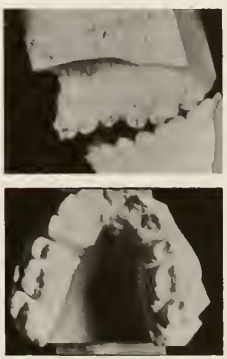

Fig. 4
Mock surgery on mounted casts to simulate surgical movements and determine desired postoperative occlusion.

Fig. 5
Cephalometric tracing showing pre-surgical position and desired postsurgical tooth, bone, and soft tissue position.

Among the major considerations in the immediate post-operative period are the difficulties resulting from intermaxillary fixation (wiring of jaws). When the jaws are wired together for prolonged periods of time there are often initial difficulties in achieving adequate nutrition, performing the necessary oral hygiene, and communicating verbally. Prior to the hospital admission for surgery the importance of post-operative nutrition and oral hygiene are discussed with the patients and their family in preparation for the 6 to 8 week intermaxillary fixation period. During the post-operative hospital stay, a member of the dietary staff instructs the patient and their family in methods of obtaining adequate nutrition during the post-surgical period. This includes distribution of special cookbooks designed for patients with wired jaws as well as instruction in the preparation of blenderized diets. (Reynolds and Turvey, 1983) During the past few years several systems using small bone screws and bone plates have been developed to provide stability in the area of the osteotomies. (Steinhauser, 1982) This may allow for early release of intermaxillary fixation or complete elimination of the need for many patients.

Following surgery the patient is seen approximately every 2 weeks until fixation is removed. Immediately after releasing the intermaxillary fixation, the interocclusal splint, used at the time of surgery, is wired to either the upper or lower jaw. Light elastics are then placed on the surgical wires and the combination of the splint and elastics serve to

guide the patient into the established post-surgical occlusion (Fig. 6). After an adequate accommodation period, the intermaxillary splint is removed and the patient is immediately returned to the orthodontist to begin post-surgical care.

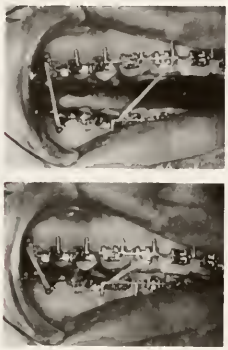

Fig. 6
Large stabilizing archwires with soldered brass lugs used in intermaxillary fixation. Surgical splint wired to the upper teeth and light elastics to guide the patient into new occlusal position.

POST-SURGICAL TREATMENT PHASE

Completion of Orthodontics

When a satisfactory range of motion and stability are achieved, the orthodontic phase is completed. It is critically important that when the splint is removed, the heavy rectangular archwires also are removed and working wires are placed to allow final tooth movement. Light vertical elastics are continued at this time to override proprioceptive impulses from the teeth that otherwise would cause the patient to seek a new position of maximum intercuspation. Removal of the splint without allowing the teeth to settle into better interdigitation can result in the patient adopting an undesirable acquired centric occlusion which in turn complicates orthodontic treatment and could stress recent surgery sites. The settling process proceeds rapidly and rarely takes longer than three months.

Retention after surgical orthodontics is no different than for other adult patients, and definitive periodontal and prosthetic treatment can be initiated immediately following the establishment of the final occlusal relationships.

Post-surgical Restorative and Prosthetic Considerations

For patients who require a considerable amount of restorative treatment, it is important to establish stable, full arch contact as soon as possible following completion of orthodontic detailing. It is especially important to provide posterior support in patients who have only anterior components of occlusion remaining. Therefore, well fitting temporary removable partial dentures frequently must be fabricated. These temporary prostheses should be relined with tissue conditioning materials as needed to maintain posterior support during healing.

The most difficult portion of this final restorative phase is establishing correct condyle/fossa relationships. It may not be possible to use the normal procedures for mandible manipulation. Bilateral mandibular manipulation or chin point guidance before complete healing is accomplished may be difficult due to slight mobility of mandibular or chin segments. Positioning with an anterior device such as a Lucia jig or leaf gauge may also be precluded because of premaxillary mobility. Temporary paresthesia of the mandible may also interfere with obtaining maxillo-mandibular relationships that will be compatible with long term, comfortable reconstruction. These difficulties may necessitate the fabrication of a temporary positioning appliance which can be adjusted during the healing phase. After the correct functional relationships have been established, the remainder of restorative treatment can be accomplished in a routine fashion.

Post-surgical Periodontal Considerations

Following the surgical procedure, the patient should be seen for a maintenance appointment approximately 10-14 weeks postoperatively. At this appointment, the mucogingival status is reevaluated, the teeth are scaled and areas of inflammation or pocketing lightly instrumented. Frequent recall maintenance should continue during the remainder of orthodontic care.

Subsequent to removal of orthodontic appliances a thorough prophylaxis with a review of oral hygiene techniques is necessary. A complete periodontal reevaluation, three to six months after completion of the post-surgical orthodontics, will identify future treatment needs. Periodontal surgery including crown lengthening or regenerative procedures is accomplished after the inflammation associated with orthodontic appliances has resolved. Areas of hyperplastic tissue should be observed for 6 to 12 months after orthodontic therapy, unless esthetic or restorative considerations necessitate earlier removal. Following completion of periodontal treatment, recall intervals will be adjusted to accommodate the individual patient's needs.

SUMMARY

The treatment of dentofacial deformity patients involves the evaluation and treatment of many types of dental and skeletal problems. These problems require that all practitioners involved in patient care interact in a multidisciplinary team approach. This sequential, team approach results in the most satisfying results in the treatment of dentofacial deformity patients.

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Research Update

To Treat or Not To Treat AIDS and Hepatitis B Victims

James J. Crawford, M.A., Ph.D.[1]

[1]*Dr. Crawford is a faculty member at the UNC School of Dentistry.*

Whether AIDS victims should be treated in the general private dental office is now the concern of many dentists. This is similar to concerns that surfaced several years ago about routinely treating self-declared hepatitis B carriers. When rejected or subjected to testing, some asymptomatic patients returned to dental clinics with an assumed name, or have gone to other offices and denied their history of hepatitis B.

Certainly, treating *any* infectious patient without the use of standard barrier protection and effective basic asepsis and sterilization techniques is hazardous. On the other hand, when using accepted, practical, optimal standards of safe health care practice, adapted from those used properly in hospital and other health care settings, it has been well established in hospital dentistry in the author's institution and in many other offices, clinics, and hospitals that infectious patients of all kinds, including hepatitis B and AIDS victims can be and are being treated safely with confidence and professional satisfaction. (Centers for Disease Control) (Valenti)

However, the greatest concern among many infection control persons is for general dentists who believe that they are safe when they employ optimal safeguards *only for recognized* infectious patients and likely carriers. Most carriers of hepatitis B and apparently most carriers of AIDS, are not recognizable or detectable by symptoms or medical history. (Valenti) (Cottone) The same is true for a number of other infections transmissible to dental personnel.

There appears to be no need in the general dentistry operatory or at the *ultra*sterile environment and practices used in the hospital operatory room of booties, floor length scrub gowns, etc. for treating the AIDS victim. But there is a valid need for the adoption of practical, optimal barrier protection, i.e. gloves, mask, and glasses, clothing not worn home, and good standards of surface protection of disinfection and instrument sterilization for application to all dental treatments of all patients, including the AIDS victims, for the protection of all operatory personnel, their families, and their patients. This uniform application of such measures can establish an adequate level of professional responsibility, satisfaction, and freedom of concern about patient discrimination. Other special precautions may be needed at times to protect the active AIDS victim from secondary infections.

The only additional note of caution would be for pregnant personnel to avoid proximity of persons who carry high levels of cytomegalovirus, such as AIDS victims, especially those treated with high speed instrumentation that creates spatter aerosols and mists. (Conte et al)

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Continuing Dental Education CALENDAR

The University of North Carolina School of Dentistry

Date, Title, Lecturer, Cost, Credit, Synopsis

JANUARY

January 17, 1986
Esthetic Composite Bonding, Sponsored by the Department of Operative Dentistry, Guest Speaker: Dr. Ron Jordan, Associate Dean, Clinical Affairs, School of Dentistry, University of Western Ontario, Ontario, Canada, Cost: Dentist – $115.00, Auxiliaries – $30.00, Credit: 7 hours, Synopsis: This course, presented by one of the foremost authorities on esthetic bonding, will present the latest information on new composite materials and related clinical techniques. Microfilled, macrofilled, and hybrid types of new composites, both self and light-cured, will be discussed with particular emphasis placed on clinical ap-

plications of light-cured materials. Clinically relevant topics to be covered include new finishing techniques, dentin bonding, glass ionomers, and posterior composites. Treatment of discolored teeth will be described including the clinical techniques for vital bleaching, resin veneers and porcelain laminates.

January 18, 1986
Esthetic Composite Bonding—Optional Participation Session, Sponsored by the Department of Operative Dentistry in conjunction with the course presented on January 17, 1986, by Dr. Ron Jordan, Faculty: Dr. Harald O. Heymann and others, Cost: $65.00, Credit: 4 hours, Synopsis: This participation session will allow course participants a "hands-on" opportunity to practice the various conservative esthetic procedures covered in the previous didactic session. All procedures will be performed on natural tooth dentoforms and will utilize the acid-etch technique in conjunction with various new resin restoration materials that will be made available. ENROLLMENT LIMITED.

January 24, 1986
Removable Partial Dentures—An Overview, Sponsored by the Department of Removable Prosthodontics, Cost: Dentists—$110.00, Auxiliaries—$50.00, Credit: 7 hours, Synopsis: This course will be an overview of the most basic as well as the most current concepts and principles related to the design phases of removable partial dentures. The course will include in detail diagnosis, treatment planning, design, and maintenance of the clasp retained removable partial dentures. Emphasis will be placed on abutment selection and preparation, connector and clasp design. Learning through participation will be the theme of this presentation and will assure individuals enrolled a well-directed approach toward solving problems related to removable partial dentures. Participants are encouraged to bring along with them casts and other available diagnostic aids of their problem cases for consultation. ENROLLMENT LIMITED.

January 31, 1986
Essential Clinical Techniques for Treating Periodontal Disease—Scaling and Root Planing, Sponsored by the Department of Periodontics, Faculty: Dr. Len Jewson and Dr. John Moriarty, Cost: Dentists—$125.00, Credit: 7 hours, Synopsis: Research and clinical experience have shown that proper root preparation utilizing curettes to debride the roots of periodontally involved teeth promotes healing. These basic procedures include scaling and root planing which eliminate bacterial plaque, calculus deposits as well as toxic waste products of bacteria on the root surface. Bacterial products cause continued periodontal inflammation which leads to further loss of the periodontium. Much of the periodontal disease seen in the general practitioner's office could be controlled by these debridement methods. This course is designed to reorient the general practitioner to the clinical techniques of scaling and root planing and the rationale for these modalities. The course will also stress examination, patient classification, establishment of baseline data, and selection of appropriate therapy. The course will consist of two sections: a didactic portion and a laboratory session where the techniques of scaling and root planing with conventional and ultrasonic instruments will be practiced and evaluated along with instrument sharpening methods. ENROLLMENT LIMITED.

APPLICATION FORM

Please enroll me in the following course(s):

	Course Title		Course Date	Registration Fee	Amount Enclosed
1)	_____	on	_____	_____	_____
2)	_____	on	_____	_____	_____

Name _____ SS# _____ Street _____

City _____ State _____ Zip _____ Office Phone _____ Occupation _____

List any other personnel attending (if in addition to participant above) and give course date:

1) _____ SS# _____ on _____ Fee _____ Occupation _____
2) _____ SS# _____ on _____ Fee _____ Occupation _____
3) _____ SS# _____ on _____ Fee _____ Occupation _____

[Make checks payable to the UNC School of Dentistry and mail to Continuing Dental Education, 410 Brauer Hall 211H, School of Dentistry, Chapel Hill, NC 27514, or call 919/966-2729 (outside NC) or 800/722-1355 (NC only) for further information.]

AHEC–School of Dentistry C.E. Courses

"Nutritional Analysis & Counseling"
Northwest AHEC
Ms. Sally Mauriello
January 10, 1986
1-5 pm

"Assertiveness Training"
Wilmington AHEC
Ms. Mary George
January 10, 17, or 24, 1986
9-4 pm

"Myofascial Pain & TMJ"
Area L AHEC
Dr. Tom Lundeen
January 24, 1986
8:30-1:00 pm

"Radiation Safety"
Greensboro AHEC
Dr. Mel Kantor
January 24, 1986
1-5 pm

"Treatment Planning for the GP"
Charlotte AHEC
Dr. Dan Shugars
January 31, 1986
2-4 pm

"Dental Sealants"
Greensboro AHEC
Dr. Bill Vann & Ms. Jan Holland
January 31, 1986
9-4 pm

"Recognizing & Reporting Child Abuse"
Fayetteville AHEC
Dr. Martha Ann Keels
January 31, 1986
3:00-4:30 pm

"Radiolucent & Radiopacities of the Jaws"
Northwest AHEC
Dr. Steve Bayne
February 7, 1986
1-5 pm

"Sealants"
Wilmington AHEC
Dr. Diane Dilley
February 8, 1986
9-4 pm

"Restorations on Endodontically Treated Teeth and Dental Cements"
Charlotte AHEC
Dr. David Koth & Dr. Dave Felton
February 20, 1986
4-8 pm

"Functional Appliances"
Northwest AHEC
Dr. John Van Venrooy
February 21, 1986
1-5 pm

"Oral Physiotherapy & Patient Motivation"
Northwest AHEC
Dr. Walter McFall
February 28, 1986
1-4 pm

"TMJ-Myofacial Pain Quandry"
Greensboro AHEC
Dr. George Greco
March 19, 1986
3-8 pm

"Sealants"
Northwest AHEC
Dr. Tom McIver
March 21, 1986
9-4 pm

"Four-Handed Dentistry"
Eastern AHEC
Dr.Doug Strickland
March 21, 1986
1-5 pm

AHEC Notes

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DF Happenings

Development Office Update

Strickland Honored

Dr. Strickland

Retiring faculty member, Dr. William Douglas Strickland, was recently honored at special activities held in his honor at the Sheraton University Center in Durham.

Honoring Strickland was the Department of Operative Dentistry, the UNC School of Dentistry, faculty, staff, and friends.

Dr. Strickland is a 1956 graduate of the UNC School of Dentistry. He completed his B.S. at Wake Forest University prior to coming to Chapel Hill. He joined the faculty immediately upon graduation. He is a Past President of the UNC Dental Alumni Association, a past recipient of the Richard F. Hunt Memorial Award, a member of Omicron Kappa Upsilon as well as a member and active supporter of Psi Omega Fraternity. Dr. Strickland has been an advisor for the North Carolina Dental Assistants' Association since 1974 and was awarded honorary membership in the organization in 1978 and has received numerous teaching awards from the various dental classes.

Strickland is the author of numerous books, journal articles, and course syllabi. He has made many clinical presentations on a local, state, and national level.

During his faculty appointment at UNC, his responsibilities have included clinical instruction, lectures, Dental Assistant Utilization Clinic Director, and participation in the Dental Assistant Training Program. His research interest has included 1) continuing evaluation of utilization of chairside assistant in sit-down, four-handed dentistry, 2) clinical evaluation of composite resins as anterior and posterior restorations, and 3) clinical evaluation of various amalgam alloys.

Dr. and Mrs. Strickland were presented gifts from friends including a gift of jewelry, a VCR, a chain saw, and a gift of money. Dr. Strickland will continue to be associated with the UNC School of Dentistry on a part-time basis providing clinical coverage and support with the technique laboratory session of the curriculum.

Periodontists Salute Dr. Hutchens

Dr. Hutchens

Dr. L. H. Hutchens, Jr., former Chairman of the Department of Periodontics, was recently honored by the Department of Periodontics, the North Carolina Society of Periodontists, and the UNC School of Dentistry. Faculty, graduate students, alumni, and friends entertained Dr. and Mrs. Hutchens at a recent dinner held at the Sheraton University Center in Durham.

Dr. Hutchens is a graduate of Davidson College and received his D.D.S. degree at the UNC School of Dentistry in 1967. He later received a Certificate in Periodontics and Master of Science in Dentistry from the University of Washington School of Dentistry. He first joined the faculty at the UNC School of Dentistry in 1970 and assumed the Chairmanship of the Department of Periodontics in 1975 upon the retirement of Dr. Grover Hunter. In 1982, he was the recipient of a Kenan Leave from the UNC School of Dentistry and was a visiting Professor at the Loma Linda School of Dentistry in Loma Linda, California where he participated in clinical teaching for both undergraduate and graduate dental students.

His research interests include periodontal disease activity, periodontal treatment responses, periodontal regeneration, dental education (evaluation methods), and health services research (periodontics and manpower). He is the author of many journal articles, book chapters, abstracts, and self-instructional units as well as having made presentations on a local, state, and national level.

Monetary gifts were received from periodontists, alumni, faculty, and

friends, and Dr. Hutchens was presented a gift of appreciation for his years of service to the Department of Periodontics, the UNC School of Dentistry, and to dentistry. The balance of money collected after the purchase of the gift was presented to the Dental Foundation of N.C., Inc. to the Department of Periodontics Fund. Dr. Hutchens will continue to serve as a faculty member in the Department of Periodontics at the UNC School of Dentistry.

Dental Foundation Concludes 1984-85 Year

The Dental Foundation of North Carolina, Inc. completed its 1984-1985 with a total of $405,109.49 in gifts from 686 contributors. This amount includes the part of The Pew Memorial Trust grant received to June 30, 1985 ($116,600) whose program is designed to help U.S. dental schools maintain the quality of their research, patient care, and service activities in a time of declining student enrollment.

This total also includes a $100,000 bequest from one of the School's alumni. Dr. J. Lowell Williams, BS '53 and DDS '57, of Pittsboro, a member of The Chancellor Club, recently included the UNC School of Dentistry as a significant beneficiary of his estate. Dr. Williams' bequest establishes a $100,000 permanent endowment fund in honor of his parents, Ruth and James Gurney Williams.

Dr. Williams provides that the Dean of the School of Dentistry may direct the income of The Williams Fund where the need is greatest, with preference being given to financial assistance for students. Dr. Williams says, "While a volunteer for both the UNC School of Dentistry and The Carolina Fund, I became acutely aware of the need for charitable gifts. I am delighted to be able to make a gift for the School of Dentistry which will help provide for the education of future dentists."

If you would like additional information about wills and bequests, you may write or call Edward H. O'Neil, Assistant Dean, Office of Institutional Development, 410 Brauer Hall 211H, University of North Carolina at Chapel Hill, School of Dentistry, Chapel Hill, North Carolina 27514, 800/722-1355 (NC only) or 919/966-4563.

1985-86 Annual Appeal Underway

Tar Heels throughout the country recently heard from Carolina in October. The appeal was for continued private support which enables the University to withstand challenges which threaten to erode its academic stature, faculty development, and quality student body.

In a letter to alumni and friends, Chancellor Fordham asserted that Carolina's rank among leading research universities is secured, in part, by exemplary support of all academic concerns.

Chancellor Fordham stresses the goal of $1 million in unrestricted contributions to meet pressing academic needs not funded by other sources.

The Fall direct mail appeal also included an information sheet describing news of the School of Dentistry, the Dental Foundation of North Carolina, and the recent acquisition of The Pew Memorial Trust Fund grant.

The Dental Foundation of North Carolina kicked off its 1985-86 membership campaign with a letter to last year contributors from the Annual Campaign Committee Chairman D. C. (Chan) Chandler ('70) urging members to renew their membership at the same or increase the amount of last year's gift. This support can be earmarked to the School, Dental Foundation, special fund or department fund established in the Dental Foundation. Memorials are also accepted. Non-active members will receive a separate solicitation from Dr. Chandler in the coming weeks. He suggests a $10.00 gift for each year since graduation from dental school.

Gift clubs are listed below with membership benefits.

Gift Recognition Clubs of the Dental Foundation of N.C., Inc. and the University of North Carolina

Your one contribution can provide membership in TWO University Clubs and in the Dental Foundation of North Carolina, Inc.

Gifts of $10,000 or more

The Chancellors Club . . . the University's highest gift club. Membership is accorded individuals who contribute $10,000 or more over a 10-year period with a minimum payment of $1,000 per year, or who make an outright minimum gift of $10,000.

Gifts of $1,000 or more

Distinguished Service Club . . . Members receive a complimentary ticket and recognition at the Annual Dental Foundation Luncheon, attendance at Dental Seminar Day, and two days of continuing education at the UNC School of Dentistry.

UNC Old Well Society . . . named for the University's most enduring and recognizable symbol. Honors contributors who achieve the $1,000 level of annual giving.

Gifts of $500 to $999

DFNC President's Club . . . Members receive a complimentary ticket and recognition at the Annual Dental Foundation Luncheon, attendance at Dental Seminar Day, plus one day of continuing dental education at the UNC School of Dentistry.

UNC William R. Davie Club . . . named for the University's founder. This gift club recognizes alumni, faculty, and friends who contribute $500 to $999 annually.

Gifts of $300 to $499

DFNC Patron's Club . . . Members receive a complimentary ticket and recognition at the Annual Dental Foundation Luncheon, plus one day of continuing dental education at the UNC School of Dentistry.

UNC Cornerstone Club . . . symbolizes the cornerstone of Old East. Includes those contributing between $300 to $499 annually.

Gifts of $100 to $299

DFNC Century Club . . . Members receive a complimentary ticket and recognition at the Annual Dental Foundation Luncheon.

UNC Century Club . . . honors those contributions from $100 to $299 annually.

SPECIAL NOTE:

Lifetime contributions to the Dental Foundation of $2,500 or more are acknowledged by inscribing the donor's name on the Recognition Plaque in the lobby of the UNC School of Dentistry.

Questions? Call the Dental Foundation of N.C., Inc.
(919) 966-4563 outside NC
(800) 722-1355 in NC

Financial Newsletter Debuts

In November, the first edition of "The Carolina Financial Planner" was published. The newsletter, distributed three times a year, focuses on various estate planning and tax topics, including different vehicles for charitable giving.

Each edition also features articles describing contributions of donors who have made the type of gift discussed in the newsletter. If you do not receive the newsletter and would like to be added to the mailing list, please call or write The Carolina Fund, (919) 966-2336, 600 NCNB Plaza 322, University of North Carolina at Chapel Hill, Post Office Box 309, Chapel Hill, North Carolina 27514.

Brauer Hall

Barker Reappointed Dean

Dr. Barker

Dr. Ben D. Barker has been reappointed Dean of the School of Dentistry at the University of North Carolina at Chapel Hill, University Chancellor Christopher C. Fordham III has announced.

The reappointment will be effective September 1, 1986 for a five-year term.

"Dr. Barker has demonstrated strong leadership in his four years as dean," said Dr. H. Garland Hershey, UNC Vice Chancellor for Health Affairs. "The School of Dentistry is internationally recognized for the excellence of its teaching, research, and service contribution, and I am confident that this will continue during Dr. Barker's second term as dean."

Before becoming dean in 1981, Barker was Program Director at the W. K. Kellogg Foundation in Battle Creek, Michigan, and a UNC faculty member from 1958-1975. In the latter capacity, he held many administrative posts including Associate Dean for Academic Affairs and Director of Graduate Studies and Continuing Education. As Associate Dean, he directed a major revision of the School's curriculum.

At the Kellogg Foundation, one of the country's largest private philanthropic organizations supporting a variety of innovative programs in agriculture, health, and education, Barker was involved in health programming with an emphasis on dental education and service. He also was responsible for the Kellogg National Fellow Program.

Barker has been a consultant to many educational and governmental organizations including the U.S. Public Health Service, Veterans Administration, and London (England) Hospital Medical College.

A fellow of the American College of Dentists, Barker is active in local, state, and national dental organizations. He is a member of the American Dental Association's Councils on International Relations and on Dental Education. He has been President of the UNC Dental Alumni Association and the UNC Chapter of Omicron Kappa Upsilon National Dental Honorary Fraternity.

The Burlington native earned his bachelor's degree from Davidson College and his D.D.S. from UNC. He also holds a master's degree from Duke University.

Dental School Receives $1.9 Million Grant to Train Dental Researchers 1985 Fellowships Named

The University of North Carolina at Chapel Hill School of Dentistry has recently received a five-year $1.9 million grant from the National Institute of Dental Research to address the shortage of clinical dentists who also have advanced scientific research skills and capabilities. The Dentist Scientist Program Award from the National Institute of Dental Research of National Institute of Health is one of eight made to institutions across the country which are involved in both the specialty clinical training of dentists as well as the conduct of research related to advances in oral health.

Dr. John Stamm, Assistant Dean for Research and Director of the Dental Research Center at UNC said, "The award of the National Institute of Dental Research Dental Scientist Program at UNC will leverage new sources to allow us to educate promising young dentists in combining clinical specialty and advanced doctoral research programs. We expect that these highly trained clinical scholars will be the dental research leaders of tomorrow."

Two individuals will be given awards annually in the program at UNC. The Fellowship will last for five years and will carry the applicants through completion of their specialty training as well as advanced research training.

Dr. James Bawden, former Dean of the UNC School of Dentistry and Director of this program indicated that the National Institute of Dental Research found the scientific and technological resources of the Research Triangle coupled with the long tradition of clinical excellence maintained by the UNC School of Dentistry to be a particularly powerful combination.

Individuals named to receive these awards in 1985 are Dr. Martha Ann Keels of Morganton and Dr. John Dmytryk of Orlando, Florida.

Dr. Keels is a graduate of Duke University and a 1984 graduate of the UNC School of Dentistry where she is currently a graduate resident in the Department of Pediatric Dentistry. Dr. Dmytryk is a graduate of the University of Florida School of Dentistry at Gainesville, Florida and is currently a graduate student in the Department of Periodontics at the UNC-CH School of Dentistry.


Dr. Bailey


Ms. Clark


Mr. Cleveland

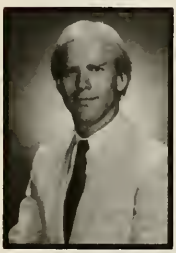

Dr. Essick


Dr. Jontell


Dr. Leonard


Dr. Maixner


Dr. McKinstry


Dr. Parker


Dr. Seaton


Ms. Smith


Dr. Straka


Ms. Supak

New Faculty Named at UNC School of Dentistry

L'Tanya J. Bailey of Winston-Salem has been appointed Clinical Assistant Professor in the Department of Orthodontics. Bailey received her B.S. in Biology/Basic Medical Sciences from Winston-Salem State University, D.D.S. from Meharry Medical College School of Dentistry, and M.S. in Orthodontics from the UNC-CH School of Dentistry. She is the recipient of several academic honors including an R. J. Reynolds Scholarship, Beta Kappa Chi, Summa Cum Laude, Dean's Meritorious Award (based on scholarship and leadership) among others. Dr. Bailey's Master's Thesis was entitled "Epithelial-Mesenchymal Interactions in the Maxillary Process of the Chick Embryo: A Study of Growth Rates".

Trudy Scott Clark of Raleigh has been appointed Clinical Instructor in the Department of Dental Ecology in the Dental Assisting Program. Clark received her A.S. and Certificate in Dental Assisting from the Coastal Carolina Community College in Jacksonville, NC and her B.S. in Dental Auxiliary Teacher Education at the UNC-CH School of Dentistry. While a student, she received several honors and awards including Outstanding Performance in Clinical Achievement and Outstanding Professional Achievement in Dental Auxiliary Teacher Education.

Kenneth M. Cleveland has been appointed to the position of Director, Outpatient Services at the UNC School of Dentistry. Mr. Cleveland received his B.S. in Special Education with minors in Psychology and Business Administration and M.A. in Speech Pathology with a minor in Special Education at Wayne State University in Detroit, Michigan. He is currently a Ph.D. candidate at Wayne State also. Prior to joining the UNC School of Dentistry, Cleveland was associated with the Children's Hospital of Michigan in Detroit, Michigan and the Sinai Hospital of Detroit. At the Sinai Hospital of Detroit, he was administratively responsible for the day-to-day operational management of the Dental and Oral Surgical Services under the

direction of the Department Chairman. Also while associated with Sinai Hospital, Cleveland implemented a problem-oriented dental record system and quality of care audit review system, wrote an orientation manual for the general practice dental residency program, participated in resident operation and practice management seminars, converted hospital-based medical billing system for dental receivables to a department based manual accounting/billing system, and served as the Coordinator of the Cleft Palate/Maxillofacial and the Head & Neck Teams.

Gregory Essick has joined the Removable Prosthodontics Faculty as a Research Assistant Professor. Dr. Essick is native of Lexington, NC. He received his B.S. in Mathematics from the University of North Carolina at Chapel Hill as well as his D.D.S. degree and his Ph.D. in Physiology. Prior to joining the faculty at UNC he was a Research Associate in the Laboratory of Developmental Neurobiology at the Salk Institute in La Jolla, California.

Mats Jontell has been appointed at the rank of Visiting Associate Professor in the Department of Endodontics. Dr. Jontell received his D.D.S. from the University of Gothenburg, Sweden and his Ph.D. (Doctor of Odontology) in Histology. His thesis was titled "Dentin Phosphoprotein-biochemical characterization of a component in biological calcification". He has also completed graduate courses in Oral Radiology, Oral Pathology, Cell Biology, Immunology, Connective Tissue (physiology and biochemistry), Mineral metabolism, and statistics. Prior to joining the UNC-CH faculty Dr. Jontell was an Associate Professor at the University of Gothenburg. Dr. Jontell has written numerous publications and abstracts.

Ralph H. Leonard, Jr., a native of Siler City, has been appointed Visiting Instructor in the Department of Operative Dentistry. Leonard, a 1985 graduate of the UNC School of Dentistry, received his B.S. and M.A. from Appalachian State University in Boone. Prior to entering dental school, he was a teacher in the Chatham County Public Schools as well as at ASW and Asheville-Buncombe Technical College.

William Maixner of Bethesda, Maryland will join the faculty in the Department of Removable Prosthodontics January 1 as an Assistant Professor. Maixner received his B.A., Ph.D., and D.D.S. from the University of Iowa. Dr. Maixner is currently a Pharmacology Research Associate at the National Institute of Dental Research in Bethesda, Maryland. While studying dentistry, he received the AMA Student Award for Meritorious Research, an award for the University of Iowa Student Table Clinic Program, and the 1982 Pierre Fauchard Award.

Robert E. McKinstry has recently been appointed Assistant Professor in the Department of Removable Prosthodontics effective September 1, 1985. McKinstry, a native of Portland, CT received his D.M.D. from the University of Connecticut School of Dental Medicine, a Certificate in Maxillofacial Prosthodontics at the University of Pittsburgh School of Dental Medicine and Eye & Ear Hospital, and his M.S. in Dental Science at the University of Pittsburgh School of Dental Medicine. Prior to joining the UNC-CH faculty, he was Assistant Professor of Prosthodontics at the Emory University School of Dentistry. Dr. McKinstry has made presentations on a local, national, and international level on subjects such as "Cleft Palate Patients and Local Anesthesia", and "Speech Considerations in the Prosthodontic Rehabilitation of the Glossectomy Patient".

Phillip R. Parker has joined the Department of Pediatric Dentistry as Clinical Assistant Professor. Parker received his M.S. in Pedodontics from the University of North Carolina School of Dentistry, his D.D.S. degree and his B.S. degree at the University of Oklahoma. He also completed a General Practice Residency at the Oklahoma Children's Memorial Hospital. While pursuing his dental degree at the University of Oklahoma, Dr. Parker was an honor student in Pedodontics and Removable Prosthodontics. He received an award for the Outstanding Senior Case Presentation from the Oklahoma Pedodontic Association.

Debra L. Seaton, a native of Grove City, Pennsylvania, has been named Clinical Assistant Professor in the Department of Dental Ecology (General Practice Residency Program). Dr. Seaton received her B.S. and M.S. in Microbiology at the Pennsylvania State University, her D.M.D. from the University of Pittsburgh Dental School, and a certificate upon completion of a Postdoctoral Training/Residency Program at North Carolina Memorial Hospital in 1984. Seaton's duties include attending responsibilities for general practice residents at North Carolina Memorial Hospital including supervision of hospital admissions and operating room procedures, staff general dentist for the Oral Facial and Communicative Disorders Program and Team Member, supervision of general practice residents and hygiene students at the Orange County Health Departments, and course instructor for Dental Pharmacology for dental hygiene, a 30-hour lecture series.

Lynn Redman Smith has been named Clinical Instructor in the Department of Dental Ecology (Dental Assisting Program). Lynn attended East Carolina University and received her certificate in Dental Assisting from the UNC-CH School of Dentistry as well as her B.S. in Dental Ecology Teacher Education. Prior to joining the faculty at the School, she was a member of the clinical staff in the Department of Oral Diagnosis (Screening Clinic).

William F. Straka, a 1985 graduate of the UNC School of Dentistry, has joined the Department of Operative Dentistry as a Visiting Instructor. Straka is a native of Toledo, Ohio. He received his B.S. and M.S. at the University of Toledo. Prior to entering dental school, Dr. Straka was a high school and college biology instructor.

Deborah A. Supak has recently been appointed Clinical Instructor in the Department of Dental Ecology. She joins the faculty of the Dental Assisting Program after having received her M.S. in Dental Auxiliary Teacher Education from the UNC-CH School of Dentistry. She received her Associate of Science in Dental Assisting from Broward Community College in Davie, Florida and her B.S. in Health Administration at Florida Atlantic University in Boca Raton, Florida.

Faculty Updates

Dr. McFall

Dr. Milone

Ben D. Barker (Administration) ('58) and **Edward H. O'Neil** (Administration/ Institutional Development) recently presented a slide program that traced the development of dentistry through the ages at a meeting of the Sanford Rotary Club. Barker explained how the university contributes to the quality of life and health through research, useful technology, and the transmitting of knowledge to practitioners.

James W. Bawden (Pediatric Dentistry), Alumni Distinguished Professor, was a recipient of the Most Excellent Service Award presented by the North Carolina Dental Society at the Society's annual meeting. Dr. Bawden was recognized for his achievements and leadership in the control of oral disease.

Harald O. Heymann (Operative Dentistry) ('79) was a guest lecturer on "Esthetic Dentistry" at a course entitled "Mini-Lectures: An Update in Dentistry" sponsored by the Medical College of Virginia at Virginia Beach, Virginia. He also spoke at the Eighth Annual Conference of the Academy of Dentists at Brigham Young University in Provo, Utah.

Walter T. McFall, Jr. (Periodontics) ('58) has been recently appointed Acting Chairman of the Department of Periodontics. McFall received his M.S. in Periodontics at the University of Washington Graduate School of Dentistry. He first joined the faculty at the UNC School of Dentistry in 1958.

Charles L. Milone (Dental Ecology) has recently been appointed Acting Chairman of the Department of Dental Ecology. Milone received his D.D.S. from Northwestern University Dental School and his M.P.H. from the University of North Carolina School of Public Health. He first joined the faculty at the UNC School of Dentistry in 1972.

David L. Raney (Adminstration/ Learning Resources and Instructional Development Center) recently taught a Management Development Institute for business leaders in the Rocky Mount area. His topic was "Decision Making". This program is part of a series sponsored by the UNC School of Business Administration. All instructors are graduates of the School's Executive Development programs. Raney was also the featured presentor at the combined annual meetings of the Mid-Atlantic and Southern Chapters of the Medical Library Association held in Winston-Salem. His topic was "New Technology: Impact and Red Flags", a discussion of the effect on library operations of new education and information systems.

Theodore M. Roberson (Operative Dentistry) ('68) has been promoted to Professor in the Department of Operative Dentistry. He is also Chairman of this Department.

William (Bill) Sulik (Fixed Prosthodontics) has resigned his faculty appointment to enter private practice in Chapel Hill. Sulik first joined the UNC faculty in 1977 after completing the Prosthodontic Graduate School Program at UNC. He later took a position in Georgetown in 1978 where he taught until 1980 when he returned to the faculty at the UNC School of Dentistry. Dr. Sulik was most active in ceramics and did much research on the Dicor System.

Sharon Turner (Oral Diagnosis) ('79) has resigned to enter private practice in Raleigh.

Staff Updates

Staff Honored for Service

The School of Dentistry at the University of North Carolina at Chapel Hill recently honored the following staff members for service to the State of North Carolina.

5 Years
Phyllis Blalock, Periodontics
Gloria Farrar, Administration (Caries Research Program)
Collins Clarkson, Removable Prosthodontics
Julia Cavendar, Oral Surgery
Daisette Wright, Dental Faculty Practice
Kathy Kelley, Dental Ecology
Jeanie Poole, Dental Ecology
Sharon House, Operative Dentistry
Gina Ellington, Administration (Institutional Development)

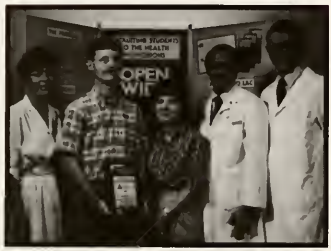
10 Years
Peggy Davis, Periodontics
Pat Jacques, Removable Prosthodontics
Peter Bedick, Administration (Learning Resources Center)
Frances Nettles, Administration (Personnel)
Evelyn Riggsbee, DAU Clinic

15 Years
Donna Champion, Removable Prosthodontics
Betty Cates, Student Clinic
Ava Fogleman, Oral Diagnosis

25 Years
Myrna Womble, Student Clinic
Dinah Lloyd, Endodontics

Staff News

Ms. Debbie Fisher Auman



McCollum et al

Birgitta Borjesson has been appointed to the position of Patient Care Coordinator. In her new role at the School of Dentistry, Birgitta will monitor the patient care management of undergraduate students in the Class of 1987 and half of the students in the Class of 1988. In this regard, she will be available to students to counsel and advise them in handling patient problems related to keeping appointments, meeting financial obligations, compliance with treatment requirements, and guiding students in the area of effective and professional patient communication/interpersonal relationships. Additionally, Birgitta will assist her assigned students in successfully completing clinical requirements by supervising clinic attendance and patient assignments. She will also perform concurrent procedural audits of patient records to assure compliance with documentation criteria established by the Quality Assurance Committee. Birgitta brings to her new position an impressive set of credentials. Educated in her native country of Sweden, she has the U.S. equivalency of a Master's Degree with a major concentration in dental hygiene and higher education. Birgitta has also held faculty positions at the University of Gothenburg and most recently at the School of Medicine, University of Pennsylvania. She has served on several professional association committees and governmental commissions in Sweden.

Debbie Fisher has recently resigned as a dental assistant with the UNC School of Dentistry after eight years to move to Lexington, NC marrying Dr. Kenneth Auman ('84). Debbie graduated from the UNC Dental Assisting Program in 1977 and worked in the graduate prosthodontic clinic for one and one-half years. She began in the undergraduate Fixed Prosthodontic student clinic in 1979.

Jane Kopczynski has also been named Patient Care Coordinator. This appointment represents a promotion for Jane who has served as a Dental Hygienist in the Dental Faculty Practice since 1978. In her new role, Jane will monitor the patient care management in the Class of 1986 and half of the students in the Class of 1988. Jane's duties will be similar to Birgitta Borjesson. In a very practical sense, it is intended that the Patient Care Coordinators will serve to facilitate a positive and mutually satisfying experience for both students and patients at the UNC School of Dentistry. Jane received her certificate in Dental Hygiene from Ohio University and has been actively pursuing an undergraduate degree at UNC with a major concentration in psychology and sociology. She has been extremely active in her professional associations, having served in such leadership positions as Delegate to the American Dental Hygienist Association. During her tenure in the Dental Faculty Practice, she has acquired a reputation by her peers as well as the faculty, as a caring, dedicated, sensitive, and skilled professional.

Warren McCollum (2nd from left), Art Coordinator in the UNC School of Dentistry's Learning Resources Center, recently won second place in international competition for poster design at the Health Sciences Communications Association annual meeting. The poster helps promote the dental profession and the UNC dental education program. Also shown (L to R) are Jacqulyn Osborne, Assistant Director of Admissions; Terri Volz who prepared an exhibit featuring the poster; Dr. Ken May, Director of Student Affairs/ Admissions; and Dr. Dan Shugars, Assistant Dean for Predoctoral Dental Education. (Photography by Jay Gladwell)

Student News

UNC Students Named to Who's Who Among Students In American Universities and Colleges

The 1986 edition of Who's Who Among Students In American Universities and Colleges will include the names of twelve students from the UNC-CH School of Dentistry who have been selected as national outstanding campus leaders.

Campus nominating committees and editors of the annual directory have included the names of these students based on their academic achievement, service to the community, leadership in extracurricular activities, and potential for continued success. They join an elite group of students selected from more than 1,400 institutions of higher learning. These outstanding students will be honored in the annual directory which was first published in 1934.

Dental students named this year from the UNC-CH School of Dentistry are William H. Brown of Snow Hill; Gary Mark Davis of Lexington; Robert P. Hollowell, Jr. of Hertford; Jerre Lynn Kennedy of Goldsboro; Lauren Leslie Patton of Durham; Toni W. Powell of

Raleigh; James J. Sciote of Beaver Falls; Michael J. Touloupas of Burlington; and John Theodore Vossers, III of Erie, Pennsylvania.

Dental Hygiene students named were Helen G. Kafant of Clemmons and Leigh Ayn Loveday of Carrington, Tennessee.

Also Linda Jean Andrus of Raleigh who is studying dental auxiliary teacher education was named.

Dental Scholars Are Announced

Five students have been named Board of Governors Dental Scholars for the 1985-1986 academic year by President William Friday.

Awards were made to Janet L. Hayes of Charlotte, Karen E. Lanier of Lexington, Zonya L. Locklear of Pembroke, George Mani of Cary, and Jean Woods of Durham.

Only North Carolina residents who have been accepted for admission to the UNC School of Dentistry are eligible for the scholarships. Begun in 1978, the program provides payment of full tuition, mandatory fees, and selected instruments plus an annual stipend of $4,000. Scholarships may be renewed for a period of three academic years and are designed to increase the enrollment of minority and financially disadvantaged students.

Class Officers Elected

The Class of 1986 recently held class elections. Officers elected were *President,* William Brown of Snow Hill, NC. William received his B.A. in Biology from the University of North Carolina at Chapel Hill. He is married to R. Byron Moore's ('70) daughter, Kim. *Vice-President,* Smoak Ackerman of Bolton, NC. Smoak is a graduate of UNC-CH where he received a A.S. in Chemistry. *Secretary,* Jeff Leal of Winston-Salem, NC who received his A.B. in Chemistry and Mathematics from UNC-CH. *Treasurer,* Bob Kent of Raleigh, NC. Bob is a 1982 graduate of UNC-CH where he received a B.A. in Chemistry and Zoology.

The Class of 1987 elected the following members class officers. *President,* Todd Crowley of Charlotte, NC. Todd received his B.S. in Biology from Waynesburg College. *Vice-President,* Sharon Nicholson of Rockingham. Sharon received her B.A. in Chemistry from UNC-CH in May 1983. *Treasurer,* Bennett Houston of Goldsboro who received her B.S. in Nursing at UNC-CH. Bennett is the daughter of Goldsboro dentist, Dr. Ben Houston. *Secretary,* Michelle Anderson of Winterville, NC. Michelle received her B.S. in Dental Hygiene from UNC-CH. *Social Chairpersons,* Mary Walton of Raleigh, NC and Michael Kirsch of Monroe, NC. Mary is the daughter of Raleigh dentist, Dr. Russ Walton ('55) and received her B.S. in dentistry from UNC-CH. Mike is also a graduate of UNC-CH where he received his B.A. in Chemistry in 1983.

The Class of 1989 elected class officers as follows. *President,* Shelia Hardee. Shelia is a dental hygienist from Texas with a degree in biology from UNC-G. She would like to eventually be head of a dental hygiene department. *Vice-President,* Richard Hunt. Richard has his degree in Political Science from UNC-CH and is a native of Rocky Mount. *Secretary,* Liz Gerics. Liz has her undergraduate degree from UNC-CH in Chemistry. *Treasurer,* Paul Coggins. Paul has his B.S. degree in pre-medicine from Davidson College and feels he would enjoy gerodontics. *Spurgeon Representative,* Karen Lanier. Karen is a dental hygienist with her B.S. and M.S. degrees in D.A.T.E. from UNC-CH. She would like to teach in a dental school after graduation. *Social Chairman,* Julia Weiss. Julia has her EE degree from Vanderbilt and is interested in specialty training following graduation.

Graduate Student Updates

Department of Pediatric Dentistry

Drs. Ioanna Iatridi, John Iwasaki, and Kim Smiley have entered the residency program of Pediatric Dentistry at UNC. Dr. Iatridi received her D.D.S. degree at the University of Athens in Greece where she taught Pediatric Dentistry during her senior year. Ioanna was born in Chapel Hill while her father was on sabbatical on the medical faculty. Dr. Iwasaki is a 1985 graduate of the University of Colorado School of Dentistry. Dr. Smiley is a 1985 graduate of Maharry Medical College of Dentistry.

Dental Research Day Plans Announced

DENTAL RESEARCH DAY
The University of North Carolina School of Dentistry

A Dental Research Day has been designed and planned to promote interest in and enhance the excellence of clinical and basic science studies related to dentistry. This special activity is scheduled Wednesday, February 26, 1985, 9:00 a.m. - 2:00 p.m. in Brauer Hall, the Dental Education Building on the University of North Carolina at Chapel Hill.

The day will feature current work of UNC dental investigators. Both oral and poster presentations prepared for the 1986 American Association of Dental Research Meeting will be presented.

Attendance is open to all dental faculty, students, and staff plus ara practitioners. Clinics and classes will be cancelled during this time to allow maximum participation.

For further information, contact the Office of Institutional Development at the UNC School of Dentistry, 800-722-1355 in North Carolina or 919-966-4563 outside North Carolina or the Chairman, Dr. Robert Kusy, 919-966-4598.

Alumni Notes

UNC Dental Alumni Student Clinic Research Fellow Named

Mr. Moore

Due to the strong student clinical research program at the University of North Carolina at Chapel Hill School of Dentistry, the UNC Dental Alumni Association has chosen to sponsor a fellowship for research to be named the UNC Dental Alumni Student Clinic Research Fellowship. With this award the recipient receives a $1,500 stipend.

The 1985 and the first recipient is David Moore, a member of the DDS Class of 1986. David is the son of Mr. and Mrs. Robert L. Moore of Eden. Davis is a graduate of the University of North Carolina at Chapel Hill where he received his A.B. in Chemistry in 1982.

During his course of study at the School of Dentistry, David won second place in the 1984 ADA/Dentsply Student Clinician Program held in conjunction with the 125th Annual Session of the ADA in Atlanta, Georgia. His table clinic was titled "Current Research on Posterior Composite Restorations".

This UNC Dental Alumni Association award is being given for David's research entitled "Current Research on Cavity Design for Posterior Composite Restorations" under the direction of Dr. William F. Vann, Jr., Chairman, Department of Pediatric Dentistry.

Dunking With Dentists

The UNC Dental Alumni Association in cooperation with the UNC School of Dentistry and its Office of Institutional Development has planned two new and exciting continuing dental education programs before basketball. A limited number of tickets is available to the games.

On December 7 at the Sheraton Greensboro Hotel in Greensboro, Dr. Dennis Torney presented a program entitled "Indications, Flap Design, Root-end Management, and Alternatives to Surgery" prior to the UNC-Rutgers game in the Greensboro Coliseum.

UNC meets Florida State in the Charlotte Coliseum on December 31. Prior to this basketball game, a program will be presented by Dr. W. David Brunson on "Bonding/Adhesion–Effect on the Restoration of Posterior Teeth" at The Park Hotel in Charlotte.

Registration fees are $25.00 for each program per dentist. Spouses and auxiliaries can attend at no additional charge. Tickets are available at $11.00 each.

Pre-registration is preferred. For further information, please contact the UNC Dental Alumni Association in Chapel Hill, (800) 722-1355 (NC Only) or (919) 966-4563.

Alumni Updates

Don L. Allen ('59) is the first person to hold the William N. Finnegan III Professorship in the Dental Sciences at the University of Texas Health Science Center at Houston. The professorship was established in April in honor of Finnegan, a Houstonian and long-time UT supporter, to recognize his many years of volunteer service to the UT Health Science Center.

Tim Burgiss ('85) has recently opened his practice of general dentistry in Union Grove. Prior to this, Burgiss has been associated with Drs. **Eldon Parks** ('63) and Doyle Pruett in Elkin.

Mark Johnson ('74) recently became a Diplomate of the Federal Services Board of General Dentistry. He is the Chief

Clinician at Dental Clinic #3 at Fort Benning, Georgia.

Jasper Lewis ('69) (Pedo '73) was recently elected to the Board of Directors of the American Academy of Pediatric Dentistry at the AAPD meeting in Washington, DC.

William M. Litaker, Jr. ('85), a Hickory native, has assumed the dental practice of Dr. James L. Price, Jr. in Hickory.

Danny S. Pender ('84) has recently relocated his family dental practice to Mount Olive.

LaRosa Pinnix-Bailey ('85) has opened her dental practice in Burlington. Her school honors and awards included being a Board of Governors Scholar, a student delegate to the North Carolina Dental Society, a member of Omicron Kappa Upsilon Dental Honor Society, and the American Society of Dentistry for Children Certificate of Merit.

Christopher N. Reese ('85) of Kannapolis has joined Dr. **Larry Tilley** ('80) in Raleigh in the practice of family and restorative dentistry.

John W. Shoaff ('76) recently wrote a recent move has put him on board the Sub Tender USS Frank Cable as Department Head. Shoaff is stationed out of Charleston, SC.

IN MEMORY

LEONARD B. BARBER, JR.
CLASS OF 1956
1931-1985

CLAUDE A. SHERRILL, JR.
CLASS OF 1957
1932-1985

DH News

This academic year began with several changes in store for the Dental Hygiene program. Clinic life will be much easier for the students with the replacement of twenty units in the clinic with very modern, efficient units. Recent legislative actions will result in changes in the curriculum. Emphasis on two areas – impression making and placement of sealants – will be given. Additionally faculty are offering continuing education courses on these topics as well.

Kathie Morr has agreed to serve as Acting Director of the Dental Hygiene Program until the position of Director is filled.

September 15-21 was National Dental Hygiene Week. The purpose of this was to draw attention to the dental hygienist as an oral health professional whose primary role is provider of preventive dental care.

One Triangle area Dental Hygienist recently received recognition for her efforts in prevention while she was a student at the UNC School of Dentistry. This Dental Hygienist is Lisa Dawn Holcomb who lives and works in Raleigh. The award Lisa received is Second Place for Outstanding Achievement in Community Dentistry in the Student Merits Awards Competition of the American Association of Public Health Dentistry. With this award came a complimentary registration for the 1985 American Association of Public Health Dentistry (AAPHD) Annual Meeting in San Francisco, California and AAPHD membership for one year. Lisa's award winning project was entitled "An Outreach Program for the Homebound Elderly". It included the development, implementation, and evaluation of an educational program for the Homemaker Home Health Aide Service, an agency in Raleigh which is currently involved in providing many forms of assistance to homebound elderly citizens of Wake County. Lisa developed service programs for approximately eighty Raleigh home health aides in an effort to improve the dental health of the homebound elderly. Included in the program was information regarding the proper methods of caring for natural teeth as well as dentures and instruction in the observation of signs which require referral to a dentist who can render more specialized care.

Dental Hygiene Alumni Association Update

The Board of Directors met Saturday, October 5 to make plans for the 1985-86 year. Additional suggestions for association activities are welcome as are donations to the Alberta Beat Dolan Scholarship and should be sent to Donna Warren, 405 Brauer Hall (211H), UNC School of Dentistry, Chapel Hill, North Carolina 27514.

–Donna Warren

D.A.T.E Update

Vickie P. White ('81) and Susan Daniel ('77) were recently elected to state offices in the North Carolina Dental Hygienists' Association. Vickie is the Recording Secretary, and Susan is Vice-President.

The faculty recently presented the Second D.A.T.E. Institute entitled "Clinical Dental Auxiliary Education in the 1980's". Twenty-two educators from the United States and Canada participated in the week long program.

The D.A.T.E. faculty have started a study club for faculty and graduate students which will meet bi-weekly. The goals of the study club are to remain current with the literature and to gain expertise in the critical evaluation of the literature. It will also be used as a peer review mechanism for research proposals and papers to be submitted for publication.

Debbie Frazier Novak ('76) decided to continue her education at the University of Louisville in the Orthodontic Program.

Patricia S. Shapins ('72) is busy being a mother to her boys. She plans to pursue her teaching profession in the future.

Lynn Redman ('84) was recently married to Brian Smith. Lynn, Trudy Clark ('82) and Debbie Supak ('85) are presently on the Dental Assisting Faculty at UNC.

Shari Mork Beavers ('71) has returned to North Carolina to live in Greensboro.

Susan Lentz Kass ('77) is presently the program director at Miami Dade Junior College in Miami, Florida.

Janet Chernega ('80) has moved to Charlotte and is the Dental Assisting Program Director at Central Piedmont Community College.

Sue Borgschulze Stephens ('72) has entered the D.D.S. program at the UNC School of Dentistry in the Class of 1989.

Connie Lady ('84) presented a paper at the 1985 International Association of Dental Research meeting in Las Vegas. The study was conducted to meet her thesis requirements for the M.S. degree in D.A.T.E. The paper was entitled "McGill Pain Questionnaire Diagnosis for Myofacial Pain". Connie is presently teaching at Old Dominion University in the Dental Hygiene program.

We are pleased to have forty-four members in our Alumni Association. The Constitution and By-Laws Committee (Susan Daniel, Sandra Lytle, and Ethel Earl) have written and revised the Constitution and By-Laws for the D.A.T.E. Alumni Association. It will be distributed to the membership and voted on at the next meeting on April 12, 1986.

Be sure to keep the D.A.T.E. Office informed of changes in address, new jobs, and professional updates.

–Rebecca Reavis Scruggs

D.A.T.E. Alumni Update

Phyllis Holland, Joan Laylon, and Bonnie Tolson are our most recent alumni as of August 1985. Joan is teaching at the University of Cincinnati in the Dental Hygiene program with responsibilities nutrition and preclinic. Bonnie is teaching at Montgomery County Community College in Blue Bell, Pennsylvania with responsibilities in radiology and expanded functions.

Ann Bruno Ferretti ('74) is currently the Director of Dental Assisting at Pensacola Junior College in Pensacola, Florida. She was re-elected for a second term as Secretary/Treasurer for the National Association of Dental Assisting Directors at the NADAD meeting held in conjunction with the 1985 AADS meeting in Las Vegas. Ann and her husband, Tom (D.D.S. '76) have recently moved into their completely restored circa 1900 home. They had the house moved to a lot on Pensacola Bay and have been working on it for a year.

Jonette Trypack ('78) was married to Larry Owens in May. Jonette is teaching dental assisting at Greenville Technical Institute in Greenville, South Carolina.

Dental Assisting Program Update

Dental Assistants' Appreciation Week Held

A hundred years have passed since the employment of the first dental assistant. This centennial was recognized during National Dental Assistant's Appreciation Week October 20-26. Today, certified dental assistants undertake a variety of clinical duties in the dental office including radiographic exposures, chairside assisting, and patient education. Other responsibilities as a dental health team member may include office records and management as well as inventory.

The Dental Assisting Office of the UNC School of Dentistry saluted its dental assisting staff on Thursday, October 24th during a special dessert reception held during the luncheon hours. Each dental assistant received a flower in appreciation of her contributions to the School and to the field of Dental Assisting.

Dental Assisting Alumni Update

The Dental Assisting Alumni Association is presently updating the membership roster. If you are a member or graduate of the University of North Carolina Dental Assisting Program, please complete the enclosed form to receive current information abou the program, Dental Assisting Alumni Association, and available continuing education courses.

Name _____ Year of Graduation _____

Address _____

Phone Number _____ Present Employment _____

Return to: Ms. Lynn Smith, School of Dentistry, Brauer Hall 211H, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina 27514

–Lynn Redman Smith

Constituent Update

NC Dental Health Services Awarded Grant

The N.C. Division of Health Services' Dental Health Section has been awarded a $192,000 grant from the Kate B. Reynolds Health Care Trust to develop a special two-year dental health project to be conducted in public schools across the state.

Dr. George Dudney, Chief of the Dental Health Section, said that the grant would enable the section to create educational materials including videotapes and manuals on dental health topics such as brushing and flossing, fluoride use, visiting the dentist and accident prevention. The project is designed for teacher training and dental education for children in grades K-6.

The Kate B. Reynolds Health Care Trust, a private foundation, located in Winston-Salem, was created in 1946 through an endowment in the will of Mrs. William N. Reynolds as an investment to improve the health care of the people of North Carolina. The Reynolds Trust awards approximately $2 million annually in grants to non-profit organizations throughout North Carolina. The trust's current priorities are programs which promote primary health care, alternative health delivery that is cost-effective, illness prevention, and health promotion.

ACD Awards New Fellows

At the recent meeting of the American College of Dentists in San Francisco, 1985 Fellowships were awarded to North Carolina dentists Dr. Clarence Biddix, Charlotte; Dr. Marvin Block, Chapel Hill; Dr. David Brunson, Chapel Hill; Dr. Stuart Fountain, Greensboro; Dr. Garland Hershey, Chapel Hill; Dr. Charles S. Huttula, Camp Lejeune; Dr. Robert Sugg, Durham; Dr. Alex Willis, Jacksonville; and Dr. Guy Willis, Durham.

The American College of Dentists was organized in 1920. It recognizes through Fellowship those who have contributed to the advancement of the profession and humanity. Its programs include seminars and workshops and it conducts studies in associated areas of interest to dentistry and its services to the public. Fellowship in the College is by invitation.

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Calendar of Events

This calendar is updated prior to each publication. Activities are scheduled in Chapel Hill, unless otherwise noted. For further continuing dental education programs, please refer to the CONTINUING DENTAL EDUCATION section. You are invited to notify our office (800-722-1355-NC or 919-966-4563-outside NC) of further activities in your area as well as checking our master calendar of events scheduled for dentistry.

December 1985

23-26 UNC School of Dentistry closed for Christmas holidays.

31 2:30 p.m. CE BEFORE BASKETBALL, Charlotte, NC
Dr. W. David Brunson, "Bonding/Adhesion–Effect on the Restoration of Posterior Teeth", Park Hotel, Charlotte. UNC meets Florida State in the Charlotte Coliseum at 7:00 p.m. Tickets available.

January 1986

1 UNC School of Dentistry closed for New Years holiday

31 2:00 p.m. Dental Alumni Executive Committee Meeting

February 1986

1 9:00 a.m. Dental Alumni Board of Directors Meeting
Dental Alumni–Class of 1987 Luncheon

9-16 CE Travel Program to Sweden

21-23 NCAGD Annual Meeting, Sheraton University Center, Durham

23-27 Dental Foundation Annual Phone Power. You are urged to resond to this important telephone call.

26 Dental Research Day, UNC School of Dentistry. This day is designed to promote interest in and enhance the excellence of clinical and basic science studies related to dentistry.

March 1986

9-12 AADS Meeting, Washington, DC

10-14 UNC-CH Spring Break

13-16 IADR Meeting, Washington

14 UNC Reception at the AADR Meeting, 5:30 p.m., Sheraton Washington Hotel, Washington, DC

21-25 Thomas P. Hinman Dental Meeting, Atlanta, GA

21 UNC School of Dentistry Reception, 6:00 p.m., Marriott Marquis Hotel, Atlanta, GA

30 Easter

31 UNC School of Dentistry closed for Easter holidays.

April 1986

4-5 NCDS House of Delegates, Velvet Cloak, Raleigh

11 Dental Parents Day

12 Dental Alumni Day
Class Reunions–1956, 1961, 1966, 1971, 1976, 1981 to be scheduled either April 11 or 12.
UNC School of Dentistry Table Clinics and Spring Picnic

May 1986

11 UNC School of Dentistry Convocation

16-18 NCDS Annual Meeting, Pinehurst, NC

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Address correction requested